103

IMPACT OF THE OCEAN DUMPING ACT AND FEDERAL DREDGING POLICY ON REGIONAL DREDGING ISSUES

EARING

BEFORE THE

SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO, AND THE OUTER CONTINENTAL SHELF

OF THE

COMMITTEE ON MERCHANT MARINE AND FISHERIES HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

FIRST SESSION

ON

H.R. 3821

A BILL TO PROMOTE CONSTRUCTION AND OPERATION OF PASSENGER VESSELS IN THE UNITED STATES, AND FOR OTHER PURPOSES

JUNE 14, 1994

Serial No. 103–107

Printed for the use of the Committee on Merchant Marine and Fisheries

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IMPACT OF THE OCEAN DUMPING ACT AND FEDERAL DREDGING POLICY ON REGIONAL DREDGING ISSUES

TUESDAY, JUNE 14, 1994

HOUSE OF REPRESENTATIVES, SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO, AND THE OUTER CONTINENTAL SHELF, COMMITTEE ON MERCHANT MARINE AND FISHERIES,

Washington, DC.

The Subcommittee met, pursuant to call, at 10:05 a.m., in room 1334, Longworth House Office Building, Hon. Solomon P. Ortiz [chairman of the Subcommittee] presiding.

Present: Representatives Ortiz, Green, Hughes, Saxton, Bentley, and Pallone.

Staff Present: Thomas R. Kitsos, Chief Counsel; Suzanne J. Waldron, Press Secretary; Robert Wharton, Senior Professional Staff; Sheila Clark McCready, Staff Director; John Aguirre, Legislative Clerk; Terry Schaff, Oceanographer; Chris Mann, Professional Staff; Katie Hornbarger, Sea Grant Fellow; Rick Kessler, Staff; Joan Bondareff, Senior Counsel; Lisa Pittman and Richard Russell, Minority Counsel; Margherita Woods, Minority Staff Assistant; Sharon McKenna, Minority Staff.

STATEMENT OF HON. SOLOMON P. ORTIZ, A U.S. REPRESENTATIVE FROM TEXAS, AND CHAIRMAN, SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO, AND THE OUTER CONTINENTAL SHELF

Mr. ORTIZ. Good morning. The hearing will come to order.

I would like to welcome all of you here today on behalf of the Subcommittee on Oceanography, Gulf of Mexico and the Outer Continental Shelf. Today the Subcommittee meets for an oversight hearing on the impact of the Ocean Dumping Act and Federal Dredging Policy on Regional Dredging Issues.

Ninety-nine percent of U.S. international trade, nearly 1 billion tons of cargo annually worth nearly $500 billion, moves on ships in and out of U.S. deep draft ports generating 1.5 million U.S. jobs and contributing $70 billion to the Gross Domestic Product.

In order to preserve effective port operations and sustain economic development and national security objectives, a coordinated, uniform national policy to facilitate the dredging process in a timely and cost-effective manner consistent with environmental regulations needs to be adopted.

The Administration, in an effort to improve the dredging process in a manner consistent with environmental protection, has established the Interagency Working Group on the Dredging Process which last month released an options paper detailing a number of possible administrative changes to provide for a more consistent and rational dredging policy.

Only a small percentage of dredge material is contaminated enough to require special handling. However, given the presence of contaminated sediments in harbors and navigation channels which must continue to be cleared to allow safe vessel access, the growing number of coastal Superfund sites which involve sediments, public opposition to marine pollution, and scientific advances which allow us to detect smaller and smaller quantities of pollutants, there has been a growing call to develop cost-effective technologies to isolate or decontaminate contaminated sediments.

Last year this Subcommittee examined the ocean disposal of contaminated dredge material and the effect of the Federal dredge permitting process on the ports of the Gulf coast region. Today, our focus will be an overview of the national issues and national policy decisions affecting regional dredging efforts. In particular, the Subcommittee will receive testimony on projected dredge sediment disposal needs, alternative technologies for dealing with contaminated dredge sediment, and alternatives for dredge sediment disposal.

I look forward to hearing from the distinguished group of witnesses that we have assembled before us today, and I thank you for being with us.

Mr. Pallone, do you have an opening statement?

STATEMENT OF HON. FRANK PALLONE, JR., A U.S. REPRESENTATIVE FROM NEW JERSEY

Mr. PALLONE. Thank you, Mr. Chairman, and I also wanted to thank you for having this hearing today on a subject that is very important, not only nationwide, but particularly to the New York-New Jersey region.

It is also good to see my colleague, Bob Menendez here. I understand he is the first speaker. He has been playing a real leadership role in trying to resolve what I call the need to dredge and at the same time the need to protect the environment and has introduced legislation with that goal in mind, which is the subject of the hearing today.

I wanted to point out initially, Mr. Chairman, that the dredge disposal site, the so-called mud dump site for the Port of New York and New Jersey is 6 miles off the coast of New Jersey in my congressional district. And the shore communities which I represent, because they depend on clean water, tourism and fishing, can't survive if ocean disposal continues into the next decade.

I was against the ocean disposal of dioxin-contaminated sediments and joined with environmental groups which objected to the granting of the dredging permit for Newark Bay, and I am not satisfied that capping is an effective means to contain toxic dredge materials which are suspended as they flow to the ocean bottom.

A few years ago, I sponsored an amendment to the Water Resources Development Act which prohibited the designation of a new ocean disposal site for dredge materials. The EPA Region II has

agreed not to seek reauthorization for a new disposal site, and in doing so, the EPA effectively set a deadline for ending ocean disposal of all but clean material once the current mud dump site is used up.

In addition, the implementation of the new Green Book testing manual by the EPA has led to a significant volume of dredge material which is no longer suited for ocean disposal. In the New York district, the Army Corps has begun to use the new 1991 Green Book testing protocols and predicts that an estimated 50 to 75 percent of dredge material that used to be considered clean will probably now qualify as contaminated. This dredge material is now failing the Green Book test because of high levels of PAHs and heavy metals and not strictly because of the dioxin problem.

Unfortunately, in my opinion, the Federal agencies were not prepared to deal with these new developments in the New York and New Jersey region and we have no disposal options other than the ocean for contaminated dredge materials right now. The Federal Government had 10 years worth of notice but failed to address the disposal crisis.

Recently, Governor Whitman established a task force to identify these short-term alternatives and I would urge the Federal agencies today, and certainly we already have, to work with the governor to identify within a short timeframe options which would be immediately available, and I stress immediately.

I am convinced that the best long-term strategy is decontamination, which the chairman mentioned. To prepare for the use of decontamination, I introduced legislation authorizing the EPA and the Corps to develop decontamination alternatives. In the past, our Congress has approved $5 million in Federal funds to assist these efforts and last week a House panel earmarked an additional $1.3 million to continue the decontamination work.

I also noted that Mr. Menendez sponsored an amendment, I believe, to the DOD authorization bill that also has the Department of Defense look into some of these alternatives to ocean disposal, including decontamination. At this point, a survey of existing and new technologies for decontaminating dredge materials has been completed and lab scale treatments are being performed. The agencies hope to proceed to pilot scale implementation in the near future but still, progress is slow, and for that reason, I believe that legislation is necessary to mandate a deadline for ocean disposal of contaminated dredge material.

Mr. Torricelli from New Jersey and I hope to introduce legislation that would establish a statutory scheme similar to what was adopted for sludge disposal under the Ocean Dumping Ban Act. The bill would phase out ocean dumping prior to the statutory deadline and require fees for dumping in the interim based on the level and amount of contamination. The funds would be used to put in place ocean disposal alternatives.

The fees paid by dumpers under the legislation would create a disincentive for dumping in the intervening years with fees increasing as the statutory deadline approaches. To ensure that viable alternatives are in place within the next few years, we would work to create economic incentives for businesses to invest in technologies to contain and treat toxic sediments.

I wanted to mention that both Mr. Menendez and I, as well as several other members from the northern part of New Jersey, over the last year have attended meetings with labor, shipping, and port interests to help resolve issues relating to the pending permits in the region, of which there are as many as 30.

And these meetings, under the leadership of Mr. William Zenga, who is the vice president of the International Union of Operating Engineers, have been productive and responsive to many of the questions which labor and shipping have about new testing demands for disposal of dredge materials.

One thing I noted in dealing with the business and labor leaders, as well as the environmentalists and shore communities, is that there is room for compromise. A pledge of unity in fact was signed last Tuesday, June 12th, by several parties long at odds with each other on the dredging issue, and I think we all have to have the courage to face the immediacy of this crisis and to work for both short- and long-term solutions.

I don't believe, however, that the answer to our current crisis is to bypass current procedures by granting waivers or by seeking to change the permitting process. The need for dredging is real, but it must be balanced with the environmental damage which might result in each case, and I would stress again, Mr. Chairman, that we really have made great progress, I believe, in the last few months in trying to bring the different interests together and come up with ways of dealing with the current permits as well as trying to move legislation that would be helpful in the long term. So I think it is a particularly good time that you are having this hearing today.

Thank you.

Mr. ORTIZ. Thank you for your statement.

Mr. ORTIZ. Mr. Saxton.

STATEMENT OF HON. JIM SAXTON, A U.S. REPRESENTATIVE FROM NEW JERSEY, AND RANKING MINORITY MEMBER, SUBCOMMITTEE ON ENVIRONMENT AND NATURAL RESOURCES

Mr. SAXTON. Mr. Chairman, I have a written statement which I would like to submit for the record, and I would just like to say at this time that this is truly a very important issue and it is one of those issues that becomes contentious and has become contentious, as you can see from the attendance here this morning, in New Jersey and the New York-New Jersey area. That is because there is a conflict which has developed here between economic interests and issues that have to do with human health and the healthfulness, if you will, of our environment.

We know full well the economic implications of this and I share those concerns with the gentleman from the northern part of New Jersey, as well as with our Governor, who has set out to try to—on the State level, find solutions to this problem.

I also share the concerns that Mr. Pallone and I have had over the years, because of the situation which occurs off the gentleman's district and north of my district. Those concerns are pointed out by a recent article which appeared just yesterday, as a matter of fact, in The Washington Post, a copy of which I have here, that speaks

to the dangers of dioxin and how little we know about it and how much we are learning.

And so the gentleman's bill, which seeks to find alternative ways of disposing of contaminated material, is obviously very much on the right track.

So I thank you for having the forethought to hold this hearing this morning. We appreciate it very much.

[The statement of Mr. Saxton follows:]

STATEMENT OF HON. JIM SAXTON, A U.S. REPRESENTATIVE FROM NEW JERSEY, AND RANKING MINORITY MEMBER, SUBCOMMITTEE ON ENVIRONMENT AND NATURAL RESOURCES

I want to begin by thanking Chairman Ortiz and the Ranking Member, Mr. Weldon, for holding this hearing in response to the concerns across the country regarding dredging and the problems it entails.

Almost on a daily basis newspapers have articles relating to the problem of dredging.

We hear and read horror stories from constituents and the media. In some cases permits are held up so long that ships are moving on to other ports because a channel is no longer deep enough to accommodate large ships.

It is true that a negative economic impact will hit port communities when they lose business because ships cannot enter their ports.

At the same time, we have been made aware of the dangers inherent in dredging. The environmental experts tell us dredging disturbs contaminated sediments and that until we can safely dispose of these poisonous materials, we should not dredge—and the environmental experts are right.

The economic experts say that if the ports are not dredged and the channels are not kept open, the port communities have no future. These experts point out that our country will suffer if we lose our waterborne commerce—and the economic experts are right.

The conflict is obvious.

The conflict is immense.

An answer is needed—and soon.

Currently, there is a move throughout the country to solve the dredging issue. Transportation Secretary Federico Pena formed an interagency working group on the dredging process in an effort to establish a Federal policy that addresses and solves the problem of dredging and disposing of waste material without sacrificing our environment.

The American Association of Port Authorities has drafted a proposal for a national dredging policy. According to the AAPA, over 90% of our ports require maintenance dredging. These ports move 95% of all U.S. waterborne commerce. Over 25,000 miles of navigation channels link American communities to each other and to foreign ports.

Recently, New Jersey Governor Christine Whitman formed a State task force. The task force will investigate ways in which spoils can be stored safely so dredging can be continued and the ports of New Jersey and New York can be saved.

I applaud all these efforts.

Everyone is finally taking notice of the urgency surrounding the dredging dilemma. It affects the environment, the economy, and our role in transportation—both home and abroad.

It is time to start putting all the information gathered by all the experts to work. We need to find a solution before we no longer play a role in national and international trade and our port communities become ghost towns.

Mr. ORTIZ. Thank you. We also have a number of members that couldn't be with us this morning because they have some other business to attend to. And I would like to include the statement of Mr. Fields, the Ranking Member of the committee, for the record.

And hearing no objection, so ordered.

[The statement of Mr. Fields follows:]

Statement of Hon. Jack Fields, a U.S. Representative from Texas, and Ranking Minority Member, Committee on Merchant Marine and Fisheries

Mr. Chairman, I want to thank you for scheduling this hearing on an issue weighing heavily on the continued viability of our ports; the disposal of dredge material under the Ocean Dumping Act.

Having represented the Port of Houston until last Congress, I am keenly aware of the massive economic losses posed by restricted access to a port facility. Dredging the Houston Ship Channel and other port areas is crucial to the large commercial vessels transiting the area. The Army Corps of Engineers' largest dredging program is in the ocean waters of the Gulf of Mexico—over 50 million cubic yards of silt and sand a year. Fortunately, dredge disposal under the Ocean Dumping Act has not been a problem despite a number of contaminated sediment sites located along our Gulf shores. Since the vast majority of the dredge material is clean, it can be used beneficially to restore beaches and create wetlands, and I would like to see increased use of this disposal option in the future.

The dredging program can be improved in other ways. At the Subcommittee's March 1993 hearing on ocean dumping of dredge material, we learned that the Port Authority of New York and New Jersey took over 3 years to obtain an ocean dumping permit for the disposal of dredge material from Newark Bay. Any attempts to streamline this process would be much appreciated, and I commend the Maritime Administration for undertaking to cut through the red tape. However, I am concerned that MARAD's efforts should culminate in more than a paper "strategy" and be translated into real time-saving results this summer.

I hope that my colleagues can also support these efforts to improve dredge material disposal under the Ocean Dumping Act. With the advent of the North American Free Trade Agreement and the expected increased commercial trade with Mexico, I am confident that Gulf ports can expect to see additional vessels plying our ports. We need to ensure safe access to our ports and to ensure that the risks of environmental and economic harm are minimized.

Thank you again, Chairman Ortiz, for scheduling this hearing, and I look forward to hearing from our witnesses.

Mr. Ortiz. I would like to introduce a good friend, the Honorable Robert Menendez of New Jersey, who has been at the forefront of the debate on national dredging issues.

Representative Menendez is a sponsor of H.R. 2173, the Harbor Environmental Dredging and Management Act of 1993, a bill dealing with a number of these issues. I welcome my colleague to this morning's hearing and I ask that he begin his testimony whenever he is ready.

Mr. Menendez, welcome.

STATEMENT OF HON. ROBERT MENENDEZ, A U.S. REPRESENTATIVE FROM NEW JERSEY

Mr. Menendez. Thank you, Mr. Chairman. I want to particularly thank you for listening to our concerns and calling a hearing in a very crowded schedule. So I want to particularly thank you for holding today's hearings.

I appreciate the comments of both of my colleagues from New Jersey, and I really have little quarrel with what they have to say. I think that we are in sync. The question is one of both short-term, immediate needs, as well as devising long-term solutions, and I appreciate the opportunity to air some of the questions that we have between us.

Mr. Chairman, I would ask that my entire statement be included in the record as if read.

Mr. Ortiz. Hearing no objection, so ordered.

Mr. Menendez. Thank you, Mr. Chairman.

STATEMENT OF HON. ROBERT MENENDEZ, A U.S. REPRESENTATIVE FROM NEW JERSEY

I would like to thank you, Chairman Ortiz, and Mr. Weldon for conducting this hearing on the dredging crisis and, in particular, the problems with the Ocean Dumping Act. A containership had to bypass the port of Boston last month because the undredged harbor is no longer deep enough to allow a vessel of this size to make the harbor passage safely. Last winter, the port of Richmond, Virginia, forced ship lines to load fewer containers and reroute freight because of silt deposits. Port Canaveral, Florida, has the same problem. President Clinton had to intervene at the port of Oakland where dredging permits had been delayed 22 years. In my area, 180,000 jobs are threatened in the ports of New York and New Jersey. Even the Sierra Club says 10 million jobs and $400 billion in economic activity in virtually every harbor in the nation are at risk. The delay is due to bureaucratic inertia because there are problems with disposing of contaminated sediments.

It is important to try to get a frame of reference for the amount of contamination causing the delays. In the ports of New York and New Jersey and many older harbor areas, the worst alleged pollutant is the dreaded dioxin. Dioxin is a fearsome chemical, less than 10 one hundred thousandths of a gram is toxic to monkeys (0.00007). The amounts of contamination in the harbor sediments are measured in parts per trillion. One part per trillion would equal one second in 31,690 years. One trillionth of a gram is one million times less than the threshold of dioxin toxicity.

The levels of contamination in the sediment range from 5 to 200 parts per trillion. The most notorious and the most studied form of dioxin is TCDD, the deadly contaminant of Agent Orange. The background level of TCDD is estimated in people in industrialized countries at roughly 7 parts per trillion. If you add all the toxic equivalences of all the other dioxins and furans, you get about 30 parts per trillion. Finally, adding the toxic equivalents of PCBs, healthy people are walking around with 100 parts per trillion. The point is, most of us in this room are just as contaminated as the sediments. Ironically, each day the contaminated silt is left uncontained, the pollution is more broadly spread. Test results in 1993 have shown that dioxin concentrations in the areas to be dredged are significantly less than when originally sampled in 1990. This means that they have spread out. Let me be perfectly clear. This is no endorsement of dioxin or any attempt to minimize the dangers chemical contamination may pose. But can allowing dioxin to move freely be the best course of action for the environment?

Since the science in this area is unsettled, attempts to establish a safety margin have resulted in the use of bioassays. Bioassays are analogous to the canaries that miners used to detect deadly gases. In this case, amphipods, buglike micro-organisms, are placed in samples of the sediment to see if it will kill them or cause accumulation of toxins in their tissue. Unfortunately, the amphipods seem to be far more fragile than anything else in the ecosystem. EPA documents show problems with the tests because of temperatures, salinity, sediment grain size and naturally occurring sources of ammonia and hydrogen sulfide (swamp gases). The test regime instituted in 1991 required serious revision in 1993 and again in 1994. The problem for any dredging project is not that there is a specific numerical standard which sets a limit but a highly touchy biological roll of the dice. The result is an ephemeral standard for the disposal of dredged materials in the ocean that is stricter, in effect, than any other environmental standard. It is stricter than standards for drinking water, air, food, medicine, or the cleanup of a Superfund site.

Is there fundamental fairness in a process which is a moving target? Are we really protecting the public health, safety and welfare when we base our decisions on tests that can seldom be duplicated? We must spend our scarce resources on cleaning up problems not litigating them.

There are several layers of bureaucratic snarls. There is tandem Federal jurisdiction. The U.S. Army Corps of Engineers is charged with issuance of dredging and disposal permits under section 404 of the Clean Water Act. The EPA has jurisdiction over ocean dumping under the Marine Protection, Research and Sanctuaries Act and discharges into navigable waters under Federal Water Pollution Control Act. The problem is, the ocean dumping regulations prohibit the disposal of material with "other than trace contaminants". The Ocean Dumping Act was passed in response to public concern about the disposal of sewage sludge and the appearance of medical waste on the shores of southern New Jersey. Dredging materials were incidentally swept within the ambit of the Act. Since the Ocean Dumping Act was passed in 1988, the technology to detect trace contamination has gone from parts per billion to parts per trillion or quadrillion. This is the heart of the dredging problem and the Ocean Dumping Act. Detection has become the standard. The law does not define "trace contaminants", neither do the agencies. Loose regulatory practices

coupled with an interest in technology have resulted in regulatory "bracket creep", to borrow a term from President Reagan.

For example, the 1991 Green Book, which provides a spectrum of revised environmental tests, was raced through the administrative process. There has been much criticism that many of these tests were not based on any scientific correlation to natural processes in the environment. With respect to the dredging problem, there is particular criticism of the testing regime which is estimated to change the amounts of dredged material that are rated as category 1. Category 1 means dredged material is acceptable for unrestricted ocean disposal. The category now accounts for 90% of the volume of dredged material. Under the new testing regime, only 40% or less of material is estimated to be category 1. Remember this is a 50% increase in the cost of dredging with no demonstrated benefit for health or the environment.

As the Subcommittee continues to investigate the nature of this problem, let me ask you to consider the following questions:

A. What was the rationale that the guidelines needed revision?

B. What was the transition period between the previous guidelines and the new guidelines?

C. Did the guidelines go into effect at different times in different parts of the country?

D. If so, why?

E. What were the dates the guidelines went into effect?

F. If permits were already in the process, was there any study of the additional cost the new guidelines would cost permit applicants?

G. Was there any consideration given to grandfathering permit applications filed prior to the issuance of the guidelines?

H. How were permit applicants informed of the guideline change?

1. Were they given any opportunity for comment?
2. What were those comments, if any were solicited?

I. How is the Green Book disseminated to the public?

Again, I would ask the Subcommittee to consider the following questions on the amphipod tests:

J. What record exists to document the scientific need for these tests?

K. What efforts were used to validate these tests prior to their incorporation into the guidelines?

L. Does validation by EPA mean that the test will work for the regulatory purpose intended?

M. An April 1991 Corps/EPA document, "Transmittal of the February 1991 Testing Manual" states "...technical procedures have been revised to better represent realistic marine organism exposure to contaminants in dredged material." How does the amphipod test represent realistic exposure to contaminants?

N. Are amphipods actually exposed to contaminants in nature in a manner similar to the test as it was incorporated into the guidelines?

O. Were these tests peer reviewed by experts with respect to the appropriateness of their use in a regulatory testing protocol as opposed to a research mode?

P. Doesn't the body of peer reviewed, scientific literature actually reflect the utility of amphipods as water quality indicators when found in situ rather than validating EPA testing protocols?

Q. Was the selection of this species an international attempt to increase the number of dredging permit applicants which would not be considered suitable for ocean disposal?

R. Were the agencies trying to use the permit applicants to fund the research to improve the agencies' regulatory testing requirements?

S. Under what authority are the agencies "taxing" permit applicants to fund research on regulatory criteria?

There are a number of groups that will insist that the dredged materials be disposed in contained landfills or decontaminated. Since the level of contamination is far less than what would be considered total remediation of a Superfund site, this would be a waste of precious landfill space need for the disposal of genuine hazardous wastes. Ironically, while dredge materials could not be disposed in the ocean, the vast majority of the material would be deemed suitable to contain a Superfund site. At the current rate of development, the option of decontamination is not feasible for the next 10 to 20 years at the scales required for major ports. In fact, the volume of silt and the extremely small amount of contamination underscores our current disparity between our technological ability to measure and our ability to treat or decontaminate. By way of analogy, it is one thing measuring the distance to Mars within a millimeter, it is another thing getting there.

To accelerate making decontamination a reality, I succeeded in offering an amendment to the Department of Defense Authorization bill which establishes a plan which I term, Green Ports. This plan is a detailed roadmap laying out strategies to encourage the further development and deployment of existing defense environmental technologies in support of dual-use port dredging requirements. This roadmap is for the identification, environmentally secure containment and decontamination of polluted dredged materials on a scale for use by major ports.

There are a wide variety of technologies that are already paid for and are under utilized. Examples of technologies that may be used are:

1. the cone penetrometer using blue laser technology pioneered by the Navy to speed testing and location of pollutants both in ground water and in sediments;
2. a hydrogen reduction process which has successfully destroyed dioxin contamination at the port of Saginaw, Michigan;
3. clean coal technologies have shown very good promise for large-scale pollution reduction with sediments. The point of the amendment is to promote full scale, working projects. The Federal Government has paid for the research on these technologies. My amendment seeks to assist in the full-scale deployment of these and other cleanup techniques. This is a very modest program to deploy technologies the Federal Government has already paid for to help keep our ports open. We have had a monstrously difficult time trying to make our case to the Armed Services Committee. We need your help to get this technology initiative underway.

In conclusion, we are watching a misdirected form of national industrial policy by environmental regulation. It is not a question of the environment versus the economy, both can be reconciled. It is a question of environmental equity. The patchwork of ersatz, environmental standards being enforced is stricter for dredged materials than any standards for drinking water, air, food, medicine or the cleanup of Superfund sites. No consideration is given to the economic damage done to individuals or communities. What is the greater threat? Moving contaminants, which are already loose in the environment, away to a capped or confined site in the ocean or immediate unemployment of hundreds of thousands of workers and the loss of health care for themselves and their families. The problem is a short-term problem. More study is needed. Our challenge is to clarify murky statutory language. We must base our dredging practices on a sound scientific basis. It is our duty to establish a rational regulatory scheme which protects genuine environmental values and legitimate economic activity. Dredging is not a sexy activity. If we are successful, when you look out the window on your port, you will see nothing. The only reward will be the prevention of another Valdez-type accident and the secure containment of pollution until the day when we figure out how to decontaminate it. I ask your help to convince our colleagues of the need to act and act quickly.

Mr. Chairman, in my area, 180,000 jobs and $20 billion of economic activity are at stake in the New York-New Jersey Harbor. Even the Sierra Club says nationwide that 10 million jobs and $400 billion in economic activity in virtually every harbor in the Nation are at risk, and the delay is due, I believe to a large degree, in terms of bureaucratic inertia, because there are problems in disposing of contaminated sediments.

This is not unique to our area. A container ship had to bypass the Port of Boston earlier last month because the undredged harbor is no longer deep enough to allow a vessel of this size to make a harbor passage safely.

Last winter, the Port of Richmond, Virginia, forced ship lanes to load fewer containers and reroute freight because of silt deposits. Port Canaveral, Florida has the same problem, and last year, President Clinton had to intervene at the Port of Oakland because of dredging permits that were waiting 22 years. Twenty-two years.

I think it is important to get a frame of reference for the amount of contamination that we are talking about that creates some of these delays. In the Port of New York and New Jersey, as my colleagues have talked about, the most dreaded, difficult problem is that of dioxin contamination, and it is a fearsome chemical; less than 10 one hundred-thousandths of a gram is toxic to monkeys.

The amounts of contamination, however, in the harbor sediments are measured in parts per trillion. One part per trillion, to give you an idea, would equal one second in 31,690 years, to give you a sense of scales. One trillionth of a gram is one million times less than the threshold of dioxin toxicity.

Ironically, each day the contaminated sediment is left uncontained, the pollution is more broadly spread. For example, we just did test results in 1993 in the area and it showed that dioxin concentrations have spread from its original tests back 3 years before in 1990. What it means is that under present circumstances, nothing being done, the dioxin has disbursed instead of maintained itself concentrated for our determination as to what to do with it.

The science in the area is unsettled. Attempts to establish a safety margin have resulted in the use of bioassays, and what those are, they are analogous to what the canaries were in the day of the miners. They used to use the canaries to get gas smells and detect it. Now we use something called amphipods, which are bug-like microorganisms that are placed in the sediment to see if it will kill them, or if it will accumulate toxins in their tissue. I think, unfortunately, the amphipods seem to be far more fragile than anything else in the ecosystem.

EPA documents that we have show problems with the tests because of salinity, because of sediment grain size and naturally occurring sources of ammonia and hydrogen sulfide, and the test regimes or protocols instituted in 1991 required serious revision in 1993 and again in 1994.

So the problem for a dredging project is not that there is a specific numerical standard. We can, when we determine what that numerical standard is, which is part of our problem, we will live by it. But it is a highly touchy biological roll of the dice. The result is an ephemeral standard for the disposal of dredged materials in the ocean, which is stricter in effect than any other environmental standard. It is stricter than standards for drinking water, air, food, medicine, or the cleanup of a Superfund site.

Now, my question is to the Committee, is there a fundamental fairness in a permit whose regulatory target keeps moving? A permittee in this process, the target keeps moving. What standard are they going to be held to if that standard changes in the process of their permit?

Are we really protecting the public health, safety and welfare when we base our decisions on tests that are questioned as being able to be duplicated? Should we be spending our resources in cleaning up, not litigating them?

Now, there is another problem here, Mr. Chairman, and those are that there are layers of bureaucratic snarls. There is tandem Federal jurisdiction, sequential Federal jurisdiction. Instead of everybody getting in together to determine whether a permit should be issued or not, we wait for one agency to take place, and then another agency to make its decision after the other agency made theirs.

The U.S. Army Corps of Engineers is charged with issuance of dredging and disposal permits under Section 404 of the Clean Water Act. The EPA then has jurisdiction over ocean dumping under the Marine Protection, Research and Sanctuaries Act, and

discharges into navigable waters under the Federal Water Pollution Control Act.

The problem is the ocean dumping regulations prohibit the disposal of material with other than trace contaminants.

Now, the Ocean Dumping Act was passed in legitimate response to public concerns about the disposal of sewage sludge and appearance of medical waste, particularly in the shores of New Jersey, and it was appropriate. However, dredge materials, I believe, were swept into the act. And the dumping act, which was passed in 1988, the technology to detect trace contaminants, has gone from parts per billion to parts per trillion, or quadrillion.

Now, this is, I believe, the heart of the dredging problem as we deal with the Ocean Dumping Act. Detection has become the standard. But the law does not define trace contaminants, neither do the agencies. Loose regulatory practice, coupled with an interest in technology, have resulted in what I think former President Reagan called "bracket creep". We keep moving this up.

The Green Book standards that were referred to in 1991 provide a spectrum of revised tests which I believe were raced through the administrative process. There has been a lot of criticism that these tests were not based on any scientific correlation to natural processes in the environment.

And with respect to the dredging problem, there is particular criticism with reference to the testing protocols which is estimated to change the amounts of dredged material that are rated in category one. We used to do 90 percent of the volume for dredged material in category one. Now it is down to 40 percent. This is a 50-percent increase into where we dispose, as well as the cost of disposal, without any real demonstrated benefit for health and the environment. And so we have submitted to the Committee a list of questions which they may consider for their consideration throughout the testimony.

Now, there are many who will call for disposing of dredged materials in contained or decontaminated landfills. I certainly support the decontamination aspects. That is what our efforts were last week before our amendment before the Defense appropriation bills, to take a series of already developed technologies that exist in the Department of Defense, and we have it in our testimony, and to transfer them for dual use at ports so that we can create decontamination strategies.

The difficulty is that we do not have those technologies today at scale for the quantity of dredged materials that we must do at these major ports. And so while we develop those, and I embrace all efforts, Mr. Chairman, to accomplish that—we call it green ports of the future, the amendment—that is what our purpose is, is to move these technologies to large scales. But for the moment, what the Sierra Club described as millions of jobs and billions of dollars in economic activity are at stake.

Now, there are some that say, let's put it in landfills. And the difficulty with that is, it is interesting to me that while dredged materials that we are talking about cannot be placed in the ocean, the vast majority of the material would be deemed suitable to contain a Superfund site.

So there are those who say that the technology that we will need to deal with the amount is 10 to 20 years off. I hope not, but until we have it, then what do we do in the interim? And that is why our Defense Department amendment, we hope, will help in seeking and expediting the decontamination efforts.

I just want to briefly say that we did introduce a bill, which I believe the Committee has within its jurisdiction. It is the Harbor Environmental Dredging Management Act. It seeks to do four major items. One is to establish a procedure for permit application, Mr. Chairman, for the dumping of dredged material into ocean waters, and to establish a timeframe.

Right now, there is no timeframe, and in my district in some cases we have people waiting 8 years for the answer to their permits.

Now, some progress has been made, but I would venture to say that if we do not focus on this, we could easily be back here next year and those permits will not have moved forward to require EPA to develop a national standard for the disposal of sediments contaminated with dioxin and trace amounts of dioxin, to require the EPA and the Army Corps to develop and submit a plan for a containment island.

I join with my colleague from the southern part of New Jersey in that context, as well as the cleanup of the cause.

This is not caused by the ports, Mr. Chairman. The Passaic River—there is a site that has been identified, and the Passaic River is ultimately the cause of the contaminants—the site which flows into the Passaic River which then flows into the New York Harbor is part of the cause of the contaminants.

It is not that the industries at the Port are the subject matter of the cause of the contamination, yet they bear the brunt. And so, therefore, we seek for the EPA to clean up the cause in the first place so that we will not have this reoccurring problem; and finally, to create the possibility of consortium permittees. We talk about the Port Authority of New York and New Jersey, and although I know my dear friend, Stan Brezenoff, will protest that they have the resources to do some of these things, they don't have unlimited resources, but they do have some resources, there are other permittees that are much smaller in size.

Unless they are allowed to consortium permit, to get together and seek their permits together, we could not withstand the cost, especially under the present regulatory process, and we seek to allow them to do that.

So in closing, Mr. Chairman, the question is not the environment versus the economy. Both can be reconciled. It is a question, I think, of environmental equity. What is the greater threat? Moving trace contaminants in the short term which are already loose in the environment, loose in the sediments in the water, unrestricted in any way, show dispersion under our testing for the last several years, away to a confined site somewhere in the ocean or in the bay, or leaving them in open waters where each time a ship strikes the bottom, it moves it into the waterways, moves it into the food chain and has the potential risks that we are all concerned about?

So the problem, I believe, that we need to address immediately as we address also simultaneously the long-term problems, is the

short-term problem, and I think we have got to base this on scientific standards. It is our duty to establish a rational regulatory scheme which protects genuine environmental values, as well as legitimate economic activity.

The prize is protecting, as you so aptly put, Mr. Chairman, the 99 percent of foreign commerce at a time of greater international trade, at a time of greater hemispheric immigration economically. Are we going to be able to do it or are we going to be able, as we have in some cases, to turn that shipping away as it did in the case of one of our port operators to Halifax, Canada? Some of our shipping went up there.

I think that if we can pursue the short-term problems and come up with some of the regulatory solutions that we need immediately, then we can get the prize: The prize being economic prosperity, defense prosperity. With a base that will be closed, our ability for forward thrust, the base that sends all of the supplies for Desert Storm, Desert Shield has six berths. Only one of them can be used right now.

Their mission, they will be part of base closure unless we can get them dredged, and of course billions of dollars in economic activity, millions of jobs nationwide. That is the prize. I believe it is a prize worthy of this Committee's attention and I want to thank you for the generosity of your time.

Mr. ORTIZ. I want to thank you for your important testimony this morning. Now, I do not have any questions, but I would like to yield to Mr. Pallone.

Mr. PALLONE. I have no questions.

Mr. ORTIZ. Mr. Saxton.

Mr. SAXTON. I am not sure there is an answer to the question that I am going to ask. It is what Mr. Hughes and Mr. Pallone and I have dealt with in regards to this topic for some time, but let me ask it anyway just to bring this issue into focus from an environmental perspective.

And let me say, as I did in my opening statement, that I understand full well the economic necessities that are involved here. New York-New Jersey Harbor doesn't happen to affect my district that much, but dredging is very important. A small dredging project in my district will make possible, as Mr. Pallone knows, the revitalization of a major town in my district, Toms River.

I am also working with Mr. Hughes on a project that will deepen the Delaware River Channel from 40 to 45 feet which has obvious economic benefits, but at the same time, as you suggest, Mr. Menendez, somehow we have to balance this in a logical way with our environmental and healthful concerns. Questions continue to be raised about the dioxin issue, as you have pointed out very well in your statement.

Yesterday's Washington Post article, which I mentioned in my opening statement, and I will just quote a sentence from it, states, "An Environmental Protection Agency study due out next month concludes that dioxin provokes severe health problems in humans, even at very low doses."

And I don't know what very low doses means, but it goes on here in some scientific language which the gentleman to my right has helped me understand a bit. I still don't fully understand it, but it

states, in its 1985 assessment, the EPA estimated that the maximum amount of dioxin that a person can ingest, over a lifetime without getting sick, is six one-thousandths of a picogram per kilogram of body weight per day. I don't know what that means, but he has interpreted that number for me and this is what it looks like.

This is the decimal point over here, and all these zeroes before you get to a six, I don't know what that means, and the people that swim in the ocean off his district and off my district don't know what that means either. And so those are the kinds of very difficult questions that we have to deal with from an environmental point of view, and so while we want to come to a logical, knowledgeable conclusion that will permit the activities that accrue to the economic benefits of the ports that we both represent, somehow we have to come to a conclusion that is a logical, knowledgeable one so that our constituents feel comfortable as well.

I realize that is not a question, but would you respond to it?

Mr. MENENDEZ. I will very briefly, Mr. Saxton. I also read the article that you referred to and I would—at the end of that article, there is a member of the congressional Office of Technology Assessment who is highly skeptical about the EPA's method of calculating the possible effects of low-level dioxin. This is not an industry person. This is a congressional representative.

And he says the conclusion of the report that a small dose can cause human cancer is not supported by clinical evidence. And hence, the crux of the problem on the question simply of dioxin, for the moment, and that is how little we know about it, and the question of what is a very low dosage.

What we are suggesting—first of all, significant amounts recently I heard some—the Governor of New Jersey say that, well, we have to stop dumping highly contaminated sediments in the mud dump. We haven't been able to do that since the Ocean Dumping Act was passed in 1988. That is not the question here. That is what part of the confusion is. We are talking about what is, "trace amounts".

The next difficulty is that trace amounts is not identified within the context of the law, nor the regulatory agencies that are involved. So a permittee has to deal with a very difficult process in determining, well, what is this ephemeral standard of trace amounts. Part of what we seek to do in our legislation is to get the EPA to say, this is the standard at which your concern, mine and Mr. Pallone's and Mr. Hughes' and anyone else's, is now a problem. And at this amount, you cannot seek to even trace the amounts that have been dumped at the mud dump in the case of New Jersey or in other sites around the Nation. But that does exist now.

So therefore that is why I say, we have a highly biological roll of the dice in which I say we don't know what permittees have to live with a standard. I would not want to see any dumping whatsoever, as long as we have a solution in the interim. We don't have the scales. That is our major problem.

Unfortunately, our government, you know, like many other problems, let it go. We do not have the technology to scale for the thousands of cubic yards that are involved, not only in New York-New Jersey Harbor, but throughout the Nation, and until we do, then

we need to have other short-term solutions, whether they be burrow pits or the abyssal plain or a whole host of other places, in very expensive and limited and needed landfills, then I think we are going to use up the sites for something that is less toxic than what we really want to put in there.

It would be not only very costly, which would be one issue, but it would ultimately dry up what we need for truly hazardous materials, and that is what we are all grappling with here.

The bottom line here is a question of money. We could build a containment island right away. If we could have the resources and identify it to be built, we would have no problem. It is a question of money. The technologies to scale is a question of money and we need the ports to generate some of that money to solve some of these problems.

Mr. ORTIZ. Thank you.

The gentleman from New Jersey, Mr. Hughes.

STATEMENT OF HON. WILLIAM J. HUGHES, A U.S. REPRESENTATIVE FROM NEW JERSEY

Mr. HUGHES. I thank the Chairman.

I want to thank the Chairman for scheduling these hearings and congratulate our colleague from New Jersey for basically taking the leadership in this most important area, as someone who has worked a long time on social dumping issues. I think, myself and others recognize that we need some balance and we need to develop long-term solutions and we put them off, as the gentleman suggests, for too long.

We just can't close our harbors. Obviously, we have to dredge our harbors and keep them open. It is ridiculous that we don't have a national standard. That is exactly what our colleague is attempting to do is develop a national standard so everybody knows what the game plan is and develop both short-term—that is all we have had, short-term solutions to the problem, as well as long-term solutions to ocean dredging. And, frankly, we need a scientific answer.

We need to develop scientific response, one that is based on facts and not fiction or emotion, and I think the gentleman is on the right track. While I am not so sure I am prepared to buy into developing an island, certainly that is one area that we need to look at, as well as other perhaps solutions, land-based alternatives, if that is the direction that science tells us we need to go.

But I salute the gentleman for taking on the leadership role in probably what I think is one of our State's, if not our region's, most important issues. I congratulate him.

Mr. MENENDEZ. Thank you.

Mr. ORTIZ. I would like to take this opportunity to thank you for taking the time to be with us this morning and sharing your valuable insight on national dredging policy, Mr. Menendez, and thank you. If there are no further questions, you are dismissed.

Mr. MENENDEZ. Thank you, Mr. Chairman. Pleased to be dismissed.

Mr. ORTIZ. We will pause for a few moments so that we can prepare for the second panel.

Mr. ORTIZ. Thank you. Looks like we are all set now. I would like to introduce today's second panel, which consists of representatives

of the Federal Government who have regulatory and administrative roles in the dredging permitting process.

On our second panel, we will hear testimony from Mr. Robert H. Wayland. Mr. Wayland is the director of the Office of Wetlands, Oceans and Watersheds at EPA. Welcome, sir.

Next is Dr. Morgan Rees, Deputy Assistant Secretary for Planning Policy and Legislation, United States Department of Army, Civil Works Division. Welcome.

Finally, but of course not least, Ms. Joan Yim, who is a Deputy Administrator of the U.S. Maritime Administration, and I think that they are accompanied by staff members, and whenever you feel like you would like for them to respond to some of the questions, feel free and just single them out.

Before we begin, I would like to remind you to please limit your oral testimony to 5 minutes if possible, and of course your entire written testimony will be appear in the record.

Mr. Wayland, would you begin your testimony, please, sir.

STATEMENT OF ROBERT H. WAYLAND, III, DIRECTOR, OFFICE OF WETLANDS, OCEANS AND WATERSHEDS, ENVIRONMENTAL PROTECTION AGENCY

Mr. WAYLAND. Thank you, Mr. Chairman. And I will substantially abbreviate my 15-page prepared statement.

I appreciate the opportunity to provide the Subcommittee with an overview of national issues and policy decisions affecting regional dredging efforts. I also will address specific issues you raised in your letter of invitation concerning the status of implementing Title V of the Water Resources Development Act of 1992 and implications of the Clean Water Act Reauthorization on Development of Site Management and Monitoring Plans.

The Marine Protection, Research and Sanctuaries Act, or Ocean Dumping Act, was one of the half-dozen landmark laws passed in the early 1970's to redress what were then recognized to be widespread and serious environmental problems. Our domestic ocean dumping program must also conform to the 1972 London convention, a treaty ratified by this country that bars ocean dumping of industrial wastes as well as the dumping of other materials which contain more than "trace" amounts of certain toxic compounds unless they are "rapidly rendered harmless" after dumping.

The Act requires that ocean dumping must not, and I quote, unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities. Under the act, EPA is to develop criteria for use in evaluating potential health and environmental effects of proposed dumping activities.

Permitting authority under the Ocean Dumping Act is shared between EPA and the Army Corps of Engineers. EPA is responsible for permitting the dumping of all material other than dredged material, and the Corps is responsible for permitting ocean dumping of dredged material. The Corps is required to use EPA's environmental effects criteria in evaluating ocean dumping permit applications.

If the Corps decides to issue a permit or conduct dredging or disposal under its own programs, the act provides that the Corps

must notify EPA. EPA then evaluates the proposal and either concurs or nonconcurs with the Corps determination that the EPA environmental effects criteria have been met.

EPA may condition its concurrence by requiring special management practices necessary for compliance with the environmental effects criteria. In the event that the agency nonconcurs on a dredged material disposal action, the act provides that the Secretary of the Army may seek a waiver of the criteria from EPA. In the history of the program, this procedure has been invoked only twice.

Both the Corps, in conducting its own dredging program, and permit applicants are required to conduct biological tests to determine whether proposed dumping will cause unreasonable degradation. The EPA specifies biological tests, or bioassays, because they provide sound estimates of environmental effects and are suitable for routine regulatory use.

They are performed by exposing representative marine organisms in the laboratory to the material proposed for dumping in order to evaluate the toxicity of that material and to evaluate the potential for bioaccumulation. This type of approach is similar to the whole effluent toxicity testing required of wastewater discharges to inland and coastal waters under the Clean Water Act.

The results are then compared to the results of bioassays conducted on a reference sediment. This reference sediment is selected in order to reflect the ambient or background conditions in the vicinity of the disposal site, absent the effects of previous dredged material discharges. In effect, the reference sediment, which represents local ambient conditions, provides the yardstick by which we judge the suitability of dredged material for ocean disposal.

I would like now to describe some of our specific implementation activities under this legal and scientific regime.

In February 1991, after notice and public comment, EPA and the Corps jointly issued a testing manual entitled "Evaluation of Dredged Material Proposed for Ocean Disposal," commonly known as the Green Book, which provides technical guidance on how to evaluate dredged material for ocean disposal suitability. That manual revised a previous testing manual issued in 1978 and was the culmination of about 5 years of effort.

We currently are developing a counterpart to the Green Book for use in evaluating discharges of dredged material in inland waters of the United States subject to regulation under the Clean Water Act, not under Section 103 of the Ocean Dumping Act.

EPA regional offices, together with their counterpart Corps district offices, have developed regional implementation agreements to reflect local conditions in implementing the requirements of the ocean dumping regulations in the testing manual. The agency is also developing sediment quality criteria (SGC) to complement the water quality criteria traditionally developed under the CWA. SQC's are being developed under the Clean Water Act, Section 304 Water Quality Criteria program to protect aquatic organisms that live in sediment, and will provide guidance for development of state water quality standards under the Clean Water Act.

EPA published a Notice of Availability in the **Federal Register** in January of 1994 announcing the impending issuance of five criteria documents for specified toxic compounds. After the agency has

addressed the public comments, the criteria will be issued and two or three new criteria added each year.

EPA and the Corps are also developing a decisionmaking guidance for managing dioxin-contaminated dredged material. The guidance will include information on the best available analytical techniques, various disposal alternatives, and methodologies for evaluating ecological and human health effects.

To respond to the 1992 WRDA amendments to the Ocean Dumping Act, EPA is working on an ocean disposal site management guidance document. The guidance is intended to provide EPA, the Corps, and permittees a consistent framework for managing and using ocean disposal sites.

Although a sound regulatory and scientific regime to control ocean disposal is important, it is also vital that alternatives to ocean disposal are planned for and developed on a regional or port-wide basis. EPA and the Corps developed and published a guidance document in 1992 addressing dredged material management alternatives.

In addition to the above guidance development, the agency is also working to revise ocean dumping regulations to reflect the WRDA 1992 amendments and to update the technical and procedural requirements to better reflect program experience and advances made in the scientific arena over the last 17 years in which our current regulations have been in effect. A draft of these regulations has been sent to the Corps for review, and we intend to propose public comment on these regulations this fall.

As I discussed previously, EPA and the Corps share dredged material-permitting responsibilities. Several other agencies have a role in the permitting process. For instance, the Fish and Wildlife Service, Department of the Interior and the National Marine Fisheries Service at NOAA have a review role under Section 7 of the Endangered Species Act to ensure that the disposal operation will not adversely affect protected species or their critical habitat. The Coastal Zone Management Act provides for consistency determinations by States before dredging permits are issued and disposal sites are designated.

As members of the Subcommittee are no doubt aware, EPA and the Corps are participating in an evaluation of the dredging and disposal permit issuance process coordinated by the Maritime Administration, which Ms. Yim will discuss later this morning.

In closing, Mr. Chairman, I just would like to note that there is before Congress at the present time a Clinton proposal for amendments to the Clean Water Act, which has the potential to substantially alleviate some of the concerns about reconciling economic and environmental issues in the dredging field by putting in place a more focused and forceful regime for controlling what we call nonpoint source pollution, or polluted runoff from agriculture, suburban farm fields and so forth.

We have done a tremendous job in addressing wastewater discharges from municipalities and from industries, but this category of nonpoint source pollution contributes much of the sediments and much of the toxic loads to our Nation's rivers, lakes, streams, estuaries and contributes to the contamination of sediment. Therefore, enactment of the Clinton Clean Water Act proposals will, over the

long term, hold the promise of reducing the need to dredge as a result of reducing sedimentation and reducing problems of toxicity in dredged material.

Thank you very much, Mr. Chairman.

Mr. ORTIZ. Thank you, sir.

[The statement of Mr. Wayland can be found at the end of the hearing.

Mr. ORTIZ. Dr. Rees, you can begin.

STATEMENT OF DR. MORGAN R. REES, DEPUTY ASSISTANT SECRETARY FOR PLANNING POLICY AND LEGISLATION, U.S. DEPARTMENT OF THE ARMY, CIVIL WORKS

Dr. REES. Thank you, Mr. Chairman.

Mr. Chairman, members of the Committee, I am Morgan Rees, Deputy Assistant Secretary of the Army. I am pleased to be here today representing Dr. John Zirschky, the Acting Assistant Secretary for Civil Works. With me today is Mr. Michael Davis, at the end of the table, our Assistant for Regulatory Affairs in the Assistant Secretary's Office.

As you requested in your letter of invitation, we have furnished my full statement for the record and I will summarize it here.

My prepared statement addresses point by point the specific questions you raised in your letter of invitation. Regarding those questions, in general, it is true the regulatory program has faced some difficult problems in reaching timely decisions in the past, but through what I believe is some excellent interagency coordination and cooperation, particularly with my colleague on this panel, Mr. Wayland and others at EPA, many of those problems have been resolved and good progress is being made on others.

In addition, extensive interagency coordination and public involvement are well under way at the national level. My other colleague on this panel, Ms. Joan Yim, is chairing the interagency working group on the dredging process. I believe her testimony will address the details of that activity, but I would like to acknowledge her important leadership in addressing issues.

We expect the size of the dredging program to continue essentially as it has been for some years now, that is, annually about 300 million cubic yards of dredged material from Federal projects and about 100 million under permits issued by the Corps of Engineers. Historically, from 3 to 12 percent of that material has been considered polluted and requires special handling. We expect that percentage to increase in the future due to substantially increased ability to detect pollutants.

To deal with this and other disposal problems, we have already launched a nationwide program to develop regional dredged material disposal management plans. Several plans have been under way for several years now and others will be starting this year. Each plan will address open water disposal, upland disposal, beneficial uses of dredged material, treatment of the material and other options. Preferred plans will depend on individual circumstances.

The regional management plans will involve all interests in the issues from the earliest possible time, continuing throughout the entire process of identifying and evaluating all options. The objec-

tive is to ensure timely decisions for environmentally sound and economically efficient disposal of dredged material.

I want to take this opportunity in my oral statement to address the context within which these dredging issues and disposal issues are so critical. Since at least 1972, with the passage of the Clean Water Act and the Ocean Dumping Act, dredging and disposal of dredged material have presented difficult and often contentious issues. Many people have worked very hard to resolve or at least narrow those issues and good progress has been made, but much work remains.

My associate, Mike Davis, and I share responsibilities for disposal of dredged material in the Office of the Assistant Secretary. I deal principally with the Federal dredging program and maintenance of Federal projects, while Mike deals principally with the regulatory program that requires permits from the Corps for non-Federal navigation program dredging.

I point this out to emphasize that there are two important aspects to these issues, the Federal program and the permit program, that affect the ports and other maritime interests. It does no good to address one without the other. They go hand in hand and we treat them integrally.

In previous hearings on this issue, we have heard of the critical problems facing the ports and other maritime interests. We have heard less about the problems facing the Corps of Engineers Federal Dredging Program, but those problems are just as real and just as critical to the Nation.

The Federal Government has made extensive investments in the navigation system for almost 200 years. Without the ability to conduct the dredging program in a timely way, we are failing to reap the benefits of those investments already made by the American taxpayer.

We believe the problems facing the maritime industry and the Federal dredging program are real, and they merit the immediate and full attention of all elements of government at all levels, as well as the full cooperation of the private sector. These are not just problems for the maritime industry or for the Corps of Engineers. All taxpayers, including the polluters, have a stake in resolving these issues quickly and effectively.

The Administration is committed to solving these problems. We have an open process to deal with these issues and invite all the stakeholders to be part of the solution to identify, evaluate and implement environmentally sound and economically efficient solutions.

Thank you, Mr. Chairman.

Mr. ORTIZ. Thank you, Doctor.

[The statement of Dr. Rees can be found at the end of the hearing.

Mr. ORTIZ. Ms. Yim, whenever you are ready, you can begin your testimony.

STATEMENT OF JOAN YIM, DEPUTY MARITIME ADMINISTRATOR, MARITIME ADMINISTRATION

Ms. YIM. Thank you, Mr. Chairman. I would like to, of course, submit my written statement for the record, along with our inter-

agency working group options paper, which I have submitted to you already.

Mr. ORTIZ. It will be included in the record.

Ms. YIM. I would like to thank members of the Subcommittee for the invitation to testify today. My name is Joan Yim and I am the Deputy Administrator of the Maritime Administration in the Department of Transportation.

As you have heard earlier, about 95 percent of U.S. exports and imports pass through U.S. ports, and the Clinton Administration regards ports as a tremendously valuable national economic asset—one that must be preserved and strengthened to meet our trade and national security needs. Dredging our Nation's harbors is an important part of Secretary Pena's goal to tie America together through integrating all modes and emphasizing intermodal connections at ports. The Secretary also has a goal of actively enhancing our environment by harmonizing transportation policies and investments with environmental concerns.

Last year, Secretary Pena, in conjunction with fellow Cabinet members and agency heads, established a Federal interagency working group on the dredging process, which I chair, to review the dredging authorization and permitting system and recommend ways of improving it.

The objective of the working group is to bring greater certainty and predictability in the dredging authorization and dredged material disposal processes, consistent with the goal of environmental protection. The group has taken a "one team" approach which the administration is fostering by asking everyone to take a fresh look at the dredging process and consider innovative changes. It is precisely because it should not take 20 years to get a project under way that we need to stand back and look at the system of how one gets from project proposal to implementation for new navigation projects. Lengthy delays in permit processing should also be avoided.

The group's participating agencies include the U.S. Environmental Protection Agency, the Department of the Interior's Fish and Wildlife Service, the Department of Commerce's National Marine Fisheries Service, and the Office of Ocean and Coastal Resources Management, the Department of the Army's Corps of Engineers and the Maritime Administration, which is the lead agency.

To carry out its mission, a 2-tier structure was formed consisting of a Policy Steering Committee, comprised of persons at the presidential appointee level, and a working committee comprised of career officials. The Steering Committee is setting the overall direction and will prepare recommendations for near-term and long-term improvements in July.

The group completed a round of 11 outreach listening sessions in January and February of this year which helped identify issues and potential solutions. During the first round, the public emphasized the following concerns: First, a modern and efficient port system is essential to national and local economies.

Second, there is a need for consistent protocols and standards for the classification and management of contaminated sediments.

Third, the dredging permitting process needs to be made more predictable.

Fourth, beneficial uses of clean dredged material should be encouraged through Federal funding and decisionmaking processes.

Fifth, funding mechanisms must be found for alternative disposal strategies and site remediation.

And sixth, upstream sources of pollution must be brought under control if the contaminated sediments problem is to be solved over the long term.

The first round clarified that the major issues also include the perceived lack of a national dredging—port-dredging policy and the potential negative impacts of contaminated sediments on human health and the environment.

In the second round of 10 outreach meetings held in April and May, public comments were received on an options paper developed by the working group, which I have submitted for the record. This input will help the group develop its final recommendations. Each of the 28 options in the paper addresses one of the five following issue areas: Federal interagency and external coordination options discuss ways to improve overall working relationships among and within agencies, as well as with nongovernmental organizations and the general public; proactive local planning and coordination options concern development of effective advanced planning mechanisms which foster greater State, local and public participation; dredged material disposal options address how to plan and more effectively manage dredged material disposal decisions with a focus on contaminated sediments as well as consider alternatives to ocean dumping of materials such as confined disposal facilities and use of decontamination technology.

Dredging Policy Options discuss an appropriate national policy with respect to dredging and what level of government should make decisions for allocating resources to undertake dredging.

Finally, funding and project development options include whether policy and procedural changes should be adopted for funding the development, improvement, and maintenance of deep draft navigation channels and harbors, including the disposal of dredged material, considering changing or devising new cost-sharing requirements for funding dredging related activities, and considering using the harbor maintenance trust fund to support additional activities.

As I noted earlier, a report of recommendations is to be presented to Secretary Pena in July. Our paper is to develop a set of recommendations that provides short-term and long-term solutions, including regulatory or statutory changes. We look forward to working with you on these proposals.

I would be pleased to respond to any questions you may have. Thank you very much.

[The statement of Ms. Yim can be found at the end of the hearing.

Mr. ORTIZ. Thank you. I would like to ask a question and this is for the entire panel. The Federal dredging projects must go through the same States of the dredge permit process as any State or port authority. Therefore, regional problems are also the problems of the Federal Government.

How does the Federal Government foresee improving the permitting process through the interagency working group and what will your concrete proposals be and can they be truly effective?

Ms. YIM. Well, what we have of course is all of the Federal agencies that are involved in both processes, the permitting process as well as new navigation projects at the table, looking at that whole system. One of the things we are actively looking at is the relationship with State and local governments from a regional basis.

We looked at models that have worked with regard to the coordination of these various levels of government. We have particularly focused on a Puget Sound planning area model which gives us some really good practical indications of how to actually implement an improved coordination. I expect that our report will focus in on some concrete examples that have already been tried in various regions of the country in terms of what we would recommend as changes. I can just answer that from a general level like that.

Mr. ORTIZ. Anybody else that would like to reply.

Mr. WAYLAND. Mr. Chairman, just one thought. I think there certainly are some opportunities to improve the permitting process. We have formulated and are implementing a number of recommendations to do that with respect to wetlands permitting under the Clean Water Act, Section 404 program, again, several of which would be incorporated into the Clean Water Act through pending legislative proposals.

But with respect to dredging, I think it is very important that we recognize that a great deal of planning and preparatory work needs to precede the filing of an application, and in a number of instances, and particularly where we have heard about very lengthy delays, there has been a lack of foresight, a lack of planning, a lack of adequate preparation to enter the regulatory process, and so I think we need to focus on all of the steps in getting from identifying a need to dredge to getting to the management of the dredged materials, one important element of which is the regulatory process.

And, again, there are certainly some opportunities for improvement there, but when we talk in terms of years, I think we need to be thinking about the very early steps of the process and then the post-approval steps of actually accomplishing the dredging and monitoring the conditions at the dredge material disposal site or upland facility if that is the option that is selected.

Dr. REES. Mr. Chairman, I would like to add that, as you pointed out in the question, the Federal dredging program is subject to the same analysis and decision process as the permit program, and we recognize that in some situations there has been less than a sufficient long-term look at the problem. In other words, we haven't looked out far enough into the future to be prepared to deal with some of the issues that have come up.

So we have done a number of things to try to make the process work better, one of which is the development of regional management plans which do look out generally on a 20-year horizon to have disposal options readily available over that period of time, so that when the need for the dredging and disposal arises, the vast majority of the coordination and analysis and work has been done and, hopefully, we will get to a decision a lot quicker.

We currently have 12 or 13 regional management plans under development, and we have budgeted in 1995 for an additional seven to start. So we are working very hard in that direction, and we hope that, from at least a long-term perspective, that approach will help substantially.

The other thing that will help is continuing the much higher degree of cooperation and coordination that we have experienced over the past several years with all the agencies at the Federal level and in some of the States, and we hope to extend that to all of the States. But it really does, as I said in my testimony, require a concerted effort of all the interests and not just the few agencies who have a direct responsibility.

Mr. ORTIZ. Thank you. I have another question for Mr. Wayland and Dr. Rees. One of the concerns that I have heard is that there has not been sufficient effort to develop treatment and disposal technologies much beyond their applicability to small scale demonstration projects.

How much Federal funding and effort is being put into developing large scale, cost-effective applications of these new technologies? Is such application still a major technological hurdle? Anybody? Mr. Wayland or Dr. Rees.

Mr. WAYLAND. I will begin. I am sure Dr. Rees will have some things to add.

Mr. Chairman, there is and has been for several years efforts under way to identify and evaluate decontamination techniques. I would have to say that at this stage, none of them appears to be sufficiently effective and well understood and within feasible cost considerations to look promising as a near-term approach to decontaminating the very large volumes of materials that we are discussing.

Of course, we have somewhat longer experience or broader experience in trying to decontaminate soils and other materials on land that are associated with contaminated sites, but we have the added problem in the marine environment of having to either treat those in situ or retrieve them and take them through a variety of different approaches that are being evaluated.

But the cost per cubic yard on these approaches is quite high and there is some difficulty to predict what their costs might be if they were scaled up to an operational level. And, again, the feasibility of them is very much in question.

Dr. REES. I would like to add to that, Mr. Chairman. Since the early 1970's, the Corps of Engineers has been conducting an extensive research and development program on the issue of alternatives for disposal of dredged material, including the examination of treatment technologies. I don't know how much of the total program has gone into technology R&D, but a fair amount has, to the extent, as Mr. Wayland says, we have looked at a number of different treatment technologies and concluded at this point that they are not competitive with other disposal options. We continue to work on them.

What I would like to do is provide for the record some precise numbers of how much we have spent on treatment technologies. I know that the overall R&D program for disposal of dredged material has gone well over $100 million since the early 1970's. We will

let you know specifically what portion of that has been applied to the treatment technologies, and I would be glad to provide some of the specific results of those tests for your staff to examine.

Mr. ORTIZ. Thank you, Doctor. That would be very, very helpful. Why don't you submit that information to the Subcommittee.

[The information follows at the end of the hearing.]

Mr. ORTIZ. I have one more question, then I am going to yield to the other members of the Subcommittee.

Do your agencies have in their permitting regimes an effective method of allowing the use of new disposal and treatment technologies and processes as they become economically feasible? Is there an established and understood set of criteria for evaluating the permitting of the use of new technologies? If you can elaborate a little bit on that. If you could just state your name for the record.

Mr. DAVIS. I am Michael Davis, Assistant for Regulatory Affairs in the Office of the Assistant Secretary of the Army. I will take a shot at the question first, Mr. Chairman, and then perhaps Mr. Wayland can add to it.

Within the existing regulatory framework, we are required to evaluate all alternatives, and I believe we have complete flexibility right now under that framework to allow the permitting of any type of technology that we might come up with, be it disposal options, containment islands or some remediation technologies, so I think that flexibility is there now. In fact, we are required to consider those options as we evaluate disposal in general.

Mr. WAYLAND. Mr. Chairman, let me first agree with the statement that Mr. Davis has made, and then ask my colleague, Mr. Kaspe, who is the Director of our Water Management Division in EPA's Region II, which covers New York-New Jersey, Puerto Rico.

Mr. KASPE. And the Virgin Islands.

Mr. WAYLAND. Richard will provide some more specific operational experience in this regard since he struggles with these questions every day. Rich.

Mr. KASPE. In New York-New Jersey Harbor first, we have $5 million under the Water Resources Development Act to provide funding for treatment technologies. We have spent roughly $2.5 million. We have allocated that money toward specific projects with either the Corps of Engineers or with our own contractors to try to identify and look at the different technologies. We should have the results of that first round by the end of 1994 to mid–1995.

Then there will be a second phase for the rest of the money. In answer to the question you raised, one of the things we have established is a Harbor Dredge Material Forum and the forum is made up of several parties, including EPA, the Corps of Engineers, and the two States. It was incorporated as part of an estuary program.

As part of the forum, we have siting work groups and we have work groups trying to deal with the issue of, how do we get the States on board to deliver the water quality certificate necessary to put a containment island in a certain place and how to get a siting decision made.

If you are going to put a decontamination facility upland, somebody has got to be able to find that upland location on which to put that facility and be willing to deal with that community that probably isn't going to want that facility. So we have the States,

EPA and a variety of stakeholders, including the environmental groups, the port interests, all trying to deal with this issue in a concerted team effort to try to come up with solutions that will ease the siting of the alternatives, as well as addressing some of the dredging issues themselves.

Mr. ORTIZ. Thank you. If you would just state your name again for the record. I want to be sure what it is.

Mr. KASPE. My name is Richard Kaspe, K-A-S-P-E, and I am the Director of the Water Management Division at EPA, Region II in New York.

Mr. ORTIZ. Thank you very much.

At this point, I would like to yield to my good friend, Mr. Hughes, from New Jersey for any questions that he might have.

Mr. HUGHES. Thank you, Mr. Chairman.

And I too welcome the panel. I wonder if I can ask first of all, Dr. Rees, on page 5 of your statement, you indicate that—to comply with Section 404(b)(1) guidelines, the Corps must determine that disposal of dredged material at the proposed site is at least environmentally damaging practical alternatives, complies with State and federally established water quality and toxic standards, will not result in significant degradation of the aquatic environment, and will be conducted in a condition as to minimize potential adverse impacts to the aquatic ecosystem.

My question is: The Ocean Dumping Act basically requires that ocean dumping not unreasonably degrade or endanger human health, welfare or amenities, or the marine environment, ecological systems or economic potentialities.

Does that track, basically? For instance, you use the term "significant degradation." How does that track with the law?

Dr. REES. Well, the testimony has two portions, one of which deals with the criteria of the Ocean Dumping Act, the other which deals with the criteria of the Clean Water Act, Section 404. The criteria are not exactly the same. They are fairly close, and that portion of the testimony you referred to deals with the Clean Water Act portion of it.

The significance is that, depending on where the material is to be disposed of, it may be subject to one or the other of the acts, and we have made an effort to make the two as consistent as we possibly can.

Mr. HUGHES. I don't understand that, because, frankly, it seems to me that the Ocean Dumping Act doesn't—is not dependent upon where it is dumped. The Ocean Dumping Act is rather clear, that dumping cannot take place that will unreasonably degrade or endanger human health, welfare or amenities or the marine environment.

Dr. REES. It is a matter of geographically where the disposal takes place. If it is landward of the baseline for measuring the territorial sea, it is subject to the Clean Water Act. If it is seaward of that baseline, it is subject to the Ocean Dumping Act.

Mr. HUGHES. But you do concede it is not necessarily consistent?

Dr. REES. The two are vitally different, yes, but we have worked very hard to maintain the more rigid of the two standards when applied to both areas. We wish, frankly, that they were the same, but they are not. We deal with that in the best way we can.

Mr. HUGHES. Relative to the action plan for resolving the New York Harbor permit issues, Mr. Wayland, maybe you can tell me, what is the definition of an interim final rule under the circumstances?

Mr. WAYLAND. Mr. Chairman, that is a rule in which we have exercised the good cause exception provided by the Administrative Procedures Act to make it effective upon publication. EPA actually took two steps with respect to clarifying the suspended phase bioaccumulation testing, which was thrown into some doubt as a result of litigation that occurred earlier.

We issued an immediately effective rule exercising the good cause exemption, the interim final rule. We also published the text of the same rule as a proposal and sought public comment on it. Therefore, we will have the ability at the close of the public comment period to modify the rule which we issued on an interim final basis if we believe that that is appropriate given the comments that we are currently receiving.

Mr. HUGHES. You haven't determined that the bioaccumulation is something that you should not be looking at?

Mr. WAYLAND. Bioaccumulation is extremely important, but the particular testing requirement which this rule addressed is one which is, frankly, more appropriate in circumstances where the material is to be continuously dumped—and as you remember, we at one time in this country dumped sewage sludge. We at one time had dumped liquid industrial waste and solid industrial wastes.

The suspended phase test deals with material in a water column, and with materials such as even fine sediment, dredged material which fairly quickly reaches the bottom, there is little or no opportunity for bioaccumulation to occur while the material is in the suspended phase.

Therefore, we had, in fact, not specified that this testing be conducted in our 1978 or 1991 testing manuals, since we do not believe that it is appropriate for evaluating the bioaccumulation of dredged material. We sought to clarify that in our regulations. We still test for bioaccumulation of the material as a sediment when it reaches the ocean bottom. So bioaccumulation remains a very important part of our consideration of whether or not a material should be suitable.

Mr. HUGHES. Let me get through all that discussion. Basically it was suspended to expedite the granting of the permits in the New York area because of the serious problems there?

Mr. WAYLAND. It would not have been intended or understood by EPA or Army to apply to the dumping of dredged material. However, when the judge heard a challenge to the earlier dredging permit, he questioned whether or not this testing might have been required and, therefore, we felt that it was important to clarify that we had never interpreted our regulations to require that that test be applied to dredge material. That testing may, in fact, be appropriate for some other materials ocean discharged, but we do not believe it is appropriate for dredge material.

Mr. HUGHES. That leads me to my final question. You indicate also—in fact, the Corps does on page 8—that the action plan also clarifies that permittees are not required to retest their sediments every 3 years unless it is determined that there have been some

accidents or other reasons. Is that a lengthy or expensive process to test sediment?

Mr. WAYLAND. Mr. Chairman, the test costs are not insubstantial, but in the context of very large port operations and the revenues associated with them, they are not expensive either. You heard testimony about the value of transshipments and about the costs of port operations. For example, for bioassays, it is probably on the order of $100,000, probably would represent the——

Mr. HUGHES. Most of the contamination—as you articulated and I agree—is from nonpoint source pollution, so if you don't have to test every 3 years, when do you have to retest?

Mr. WAYLAND. There is a need to reevaluate whether or not the testing which was conducted remains valid based upon the conditions in the environment. It is not an automatic retest requirement, but we are indicating to the field that there needs to be a reevaluation of the nature of conditions in the environment to determine whether or not new testing should be required.

Mr. HUGHES. Frankly, how in the world can you determine the nature of the sediment after 2 or 3 years, because most of the pollution, as you acknowledge, is from nonpoint source pollution? How can you determine whether or not it is suitable material for disposal unless you retest?

Mr. WAYLAND. There may in fact be spills, other discharges, which are identifiable and are a basis to determine that retesting should be appropriate.

Mr. HUGHES. It is the major source of pollution as you acknowledge.

Mr. WAYLAND. In a particular harbor, it could be a significant source.

Mr. HUGHES. Basically what you are saying is that this guideline is basically to expedite the permitting process? Is that the reason for suspending retesting?

Mr. WAYLAND. No, I think it is to avoid unnecessary testing where there is not an indication that conditions have changed such that new testing should be required.

Mr. HUGHES. But how can you tell what the condition of sediment is, how contaminated it is unless you test every 3 years?

Mr. WAYLAND. I think there is a basis to evaluate the nature of the industrial activity that has taken place, the nature of transportation—other factors that will give you an indication of whether things may have, in fact, changed.

Mr. HUGHES. Can we scientifically determine, conject, how much contamination will be caused to sediment from nonpoint source pollution? Can we scientifically project that?

Mr. WAYLAND. There is some act to do that, although probably at greater expense than the cost of undertaking testing. Very complex water quality and sediment transport models will give you ability to predict changes in sediment contamination.

Mr. HUGHES. Mr. Chairman, I really question basically whether that is good policy. I thank you.

Mr. ORTIZ. Thank you, Mr. Hughes.

Does the gentlelady from Maryland, Mrs. Bentley, have any questions?

Mrs. BENTLEY. Yes, I do, Mr. Chairman, thank you.

Mr. Chairman, this is probably one of the most important discussions that we will have on any point in regard to the future of the ports of this country, because of the difficulties of dredging and where we put materials.

Dr. Rees, I think we have battled about this over the years on many aspects of it. And I am glad to hear that there is an effort being made among the Federal agencies to coordinate activities rather than each one taking 1 or 2 or 5 years to issue a permit and then the next one takes its turn, because the delays in permits have created many of the expensive costs to ports that could have been avoided if we had had any kind of a joint effort among the agencies. So that part of it I am glad to hear is taking place.

Also, I would like you to expand a little bit more on your efforts, and you can do it Dr. Rees, or Ms. Yim, working with the State and local agencies on this permit process and what you are trying to do with them.

Dr. REES. Well, the effort that Ms. Yim is leading certainly is bringing into the scope of the issue a lot of interests that haven't previously been involved, and I will defer to Ms. Yim in responding to that part.

But I mention in my testimony that we have asked the Corps at the District Office level to develop regional disposal management plans. Many of them are doing that and that effort is supposed to, and I believe in every case does, include active involvement of all levels of government and of all the stakeholders outside government as well.

So there is really a vigorous effort to bring everybody on board as early as possible so that we don't get down to the decision time and somebody jumps up and says, "Wait a minute, I have a problem." We don't want that to happen, and I think the system that we have developed and have under way will work very well to avoid that.

Mrs. BENTLEY. Is the EPA part of that picture?

Dr. REES. Yes.

Mrs. BENTLEY. And are you working with, let's say, the State EPA environmental agencies as well, bringing those in, Mr. Wayland?

Mr. WAYLAND. Yes, Mrs. Bentley. In fact, as Mr. Kaspe was describing, we have similar efforts to the one that Mr. Kaspe is working with in New York and New Jersey in a number of other parts of the country and we believe it is extremely important to not only engage in a dialog on broad policy matters, but to try to particularize some of that discussion to what would be the solution for a particular coastal region or inland port region, so that we are focused on what the actual opportunities are to manage dredged material and what the dredging needs are.

And I think that we need to be operating at both those levels, both in evaluating policy and operational changes, as well as looking at how engaging all of the stakeholders concerned can lead to solutions that meet the needs of a particular port and protection of the environment in a particular area of the country.

Mrs. BENTLEY. I was particularly pleased, Ms. Yim, to hear you specify that the 20-year cycle for permits is just not acceptable anymore.

Ms. YIM. Yes.

Mrs. BENTLEY. I can name you a lot of 20-year cycles that I have sat through as far as dredging permits are concerned.

Ms. YIM. Just to add to what the others have said, the working group has identified as one of its major challenges how we come up with something that is national in scope in terms of addressing this issue while also being mindful of regional differences, in particular, as to how the ports are structured. They are structured very differently.

Mrs. BENTLEY. Yes, they are.

Ms. YIM. I think the most challenging are the ones that have a State boundary going down the middle of their port and have to deal with two State regulatory controls, the water quality agencies at the State level, as well as their local jurisdictional regulatory agencies. So we have definitely identified that as our major challenge facing us in terms of coming up with recommendations.

Mrs. BENTLEY. Now, we have been fortunate in the Chesapeake Bay—fortunate and unfortunate, I might say—in being able to jump over some of those hurdles, although we are now closing out a disposal site called Hart-Miller which took us 14 or 15 years before we could begin any activity there, and that is just about filled up. And then we were able to build a beautiful new terminal out of dredged material.

But when the next phase of dredging was about to start, the world collapsed. Everybody said you can't put the material over here because of the fear of contaminated contents in that material, although nobody knew for certain that there was any contamination. When they checked on the Segar material, there was no contamination in it, with the exception of a slight, very designated portion of it, and that has been set in a certain area. Basically, it was not anywhere near the contamination that was expected.

I think that every effort that can be made, and you did allude to it, Dr. Rees, and Mr. Wayland, on the contaminated portion, how we determine that, how we can excavate it, will be very, very critical for all ports, because that is the one that drives everybody up the wall that we just don't want that material around, and I think that every effort you can do on that would be extremely vital.

I think it was you, Dr. Rees, who said that 3 to 12 million cubic yards of the material is considered contaminated. How did we arrive at that figure and how much of it is highly contaminated?

Dr. REES. Let me answer the second part first. There is no clear distinction between "highly contaminated" and "contaminated that requires special handling." It is material that you have to look at very carefully to decide how to dispose of it and how to manage it after it is disposed. The number comes about as a result of the testing, either under the Ocean Dumping Act or the Clean Water Act, depending on where the material is to be disposed.

For example, the vast majority of the material that the Corps dredged is from the Mississippi River and it is clean sand. The only problem getting rid of it is the challenge to find beneficial uses of it, but pollution, per se, is not a problem there, whereas in the industrial port areas, we find that a much higher percentage of the dredged material requires special handling.

Mrs. BENTLEY. Is there a bigger demand today for beneficial uses—I mean, for using some of this clean sand than there was, let's say, 10 years ago or 15 years ago?

Dr. REES. Yes, there most certainly is, and as you may be aware, we supported legislation in the 1992 Water Resources Development Act which would allow 75 percent Federal participation in the cost of those beneficial uses, so we are pursuing that vigorously.

Frankly, in my own personal opinion, we need to pursue it even more vigorously than we have. I hope it is just a matter of gearing up, that we haven't done as much as we have, but I think we are certainly heading in that direction very clearly.

Mrs. BENTLEY. Again, Mr. Chairman, I want to say that what we have learned here this morning is very, very important and I would like unanimous consent to submit some additional questions to our panelists.

Mr. ORTIZ. Hearing no objection, so ordered.

Mr. ORTIZ. The gentleman from Texas, Mr. Green.

Mr. GREEN. Thank you, Mr. Chairman. I apologize for being late, but I am also on the Education and Labor Committee and we are marking up the health care bill. And, as always, we try and juggle the schedules to be at each Committee. But I wanted to be here because of representing the Port of Houston and the geographic area of the Port of Houston along with a lot of people who live around the port.

I am looking forward to reviewing the remarks and also the testimony and staying as long as I can before the next vote on the health care.

The question I would like to ask, Mr. Chairman, is particularly from the Corps or from any of the panel that we have—what happens if the Corps of Engineers finds that there is no economically feasible site or method for such dumping? And that may have already been addressed by an earlier question or in testimony, but——

Dr. REES. That is a very difficult question. If I understand it, if there is no economically feasible disposal site that meets the environmental criteria, then presumably dredging would not occur, but we have not encountered that circumstance yet. We have had some very difficult cases and some have taken a long time to resolve, but we don't believe that not dredging is an option in itself.

In other words, there are authorized Federal channels and they are utilized by port facilities that need to do their own dredging and to say "no" is not an option. We just need to continue to work until we find out what the best option is.

Mr. GREEN. To see how it is done. And again, this Subcommittee, Chairman, held a hearing in December in Houston on the Port of Houston and the beneficial uses from dredged material. The testimony earlier from Mrs. Bentley was that the amount of contaminated sediment, at least, for example, from the Port of Houston was very low compared to other industrialized areas.

And the testimony we heard there was the beneficial use, for example, in Galveston Bay for rebuilding estuary systems—and correct me if I am wrong—I was told last month that it was oversubscribed for the sediment from the Port of Houston or the

dredging. That may or may not be correct. It wasn't in testimony, but I just heard that.

So there are a lot of options, I guess, for that clean sediment that is available, for beach reclamation and for what I would like to see as an island in a bay that would also be for a bird sanctuary. But is that true that it is in areas where there is a lot of clean sediment that actually could be oversubscribed?

Dr. REES. It wouldn't surprise me in the least. There are many good opportunities for beneficial uses. One of the keys is to identify a non-Federal sponsor willing to come up with the other 25 percent, because as I mentioned a minute ago, the Federal Government would pay 75 percent.

That has been somewhat of a limiting factor, but on the other hand, there is an indication there of the degree of interest among the non-Federal interests. That is, if there is no sponsor, then maybe there is not as much interest as we would like to think there is. The whole principle of cost sharing of projects, not only disposal of dredged material, but all kinds of water resources development projects, has proved to be a very compelling policy and an important one.

So we, I think, need to work a little harder. We have some activities under way to inform potential non-Federal sponsors of the opportunity and to develop some public information programs so people know that this option is available for the States or for ports or for environmental interests.

For example, we do have a wetland development project, though not a beneficial uses project, at a Corps reservoir where the non-Federal sponsor is Ducks Unlimited. So there are a number of opportunities that we haven't pursued yet but are working in that direction to identify non-Federal sponsors for these activities.

Mr. GREEN. The other concern that I heard is just the time lag, even though you may have the local sponsor and also the beneficial uses time lag, because I know we are looking at authorization, I believe, in 1996, if not earlier, hopefully much earlier. But is that continuing to be a problem?

I know, again, I am telescoped into the problem we have at the Port of Houston because that is the district I represent.

Dr. REES. Well, certainly the Houston experience was blazing the trail, if you will. There were a lot of innovative things that were being done, and I would hope that once we have done those kinds of things a time or two, the subsequent efforts become that much easier. In other words, Houston may have served as a prototype for other areas and makes the resolution of the problems in other areas that much easier. We are working in that direction in a number of places, and there has been some start-up time involved that we hope is not repeated each time we have a disposal case to deal with.

Mr. GREEN. Thank you, Mr. Chairman. And like Mrs. Bentley, I would like to have the option to provide other questions, and I appreciate the panel and their time today.

[The statement of Mr. Green follows:]

STATEMENT OF HON. GENE GREEN, A U.S. REPRESENTATIVE FROM TEXAS

Good morning and thank you, Mr. Chairman. I want to welcome all of our witnesses who will be testifying today. I am pleased that we are having this hearing today on the Ocean Dumping Act and Federal dredging policy on regional dredging issues.

As a member who represents the Port of Houston, I am very concerned about the beneficial use on dredging in the Port of Houston and I am also concerned on whether or not Galveston Bay is suitable for beneficial use and the potential for habitat in Galveston Bay.

This hearing is of the utmost importance to the Port of Houston because of the current predicament we are in with dredging. I am also concerned about the economic status of the Port if dredging does not occur. I would like to see more action taken to eliminate the many problems ports are encountering with the permitting process. I look forward to hearing suggestions from our witnesses on ways to improve the permitting process.

Mr. Chairman, I want to thank you for holding this important hearing, one that is important to my district and the State of Texas. Thank you.

Mr. ORTIZ. I want to thank the members of the panel for your valuable testimony and insight that you have shared with us today. The Subcommittee members and I have additional questions for the witnesses and we would so appreciate your reply for the record in writing.

Now, we will move onto the third panel and thank you for being with us today. We will pause briefly so that we can accommodate the following panel.

Mr. ORTIZ. I would like to introduce today's final panel which consists of representatives of regional port authorities, private industry and the environmental community, all of whom have participated in the dredging process and would like to say about how national policy affects regional issues.

On our third panel, we will hear testimony from Mr. Stanley Brezenoff, Executive Director of the Port Authority of New York and New Jersey; Ms. Janeen Hansen, who is the project manager of the Boston dredging project for the Massachusetts Port Authority; Mr. Paul Carangelo, the coastal environmental planner for the Port of Corpus Christi Authority; Dr. Joseph Germano, Manager of the Marine Environmental Sciences Division of the Scientific Applications International Corporation; and finally we will hear from Ms. Beth Millemann, Executive Director of the Coast Alliance.

I would like to warn the panel that in the next few minutes, all kinds of bells are going to go off; there may be voting interruptions. Therefore, I would appreciate you expediting your testimony. We will supply you with some additional questions, and I assure you that your entire written testimony will be included for the record.

I think that we can begin with Mr. Brezenoff. We will hear your testimony, Mr. Brezenoff.

STATEMENT OF STANLEY BREZENOFF, EXECUTIVE DIRECTOR, PORT AUTHORITY OF NEW YORK AND NEW JERSEY

Mr. BREZENOFF. Thank you, Mr. Chairman, and members of the Subcommittee. I am Stanley Brezenoff, Executive Director of the Port Authority of New York and New Jersey, and I am grateful for this opportunity.

Our dredging problems involve the Federal regulatory process, poor sediment quality and the need for immediate and long-term disposal strategies. We have a crisis situation that could result and

has resulted in the loss of cargo to competition, especially to ports in Canada. A new Federal policy must, in our view, address the duration of the permit process, the validity of testing procedures, conflicting standards, sources of contamination, and the Federal role in affording environmentally suitable sediment management strategies.

Fifteen months ago, we appeared before this Subcommittee while still seeking a Federal ocean disposal permit to dredge the berths at our largest maritime terminal complex, and there were close to 40 other permits pending in the port. Recently, eight permits were issued but three times that are still in limbo.

Over 24 marine terminals need to be dredged and future port operations depend on the Federal permits. The affected facilities range from a public utility that moves fuel to its generators, to the Army's military ocean terminal in Bayonne that was a key Desert Storm facility but which cannot accommodate fully loaded vessels.

In the time since the last hearing, we have made some progress. You have heard about some of it from the prior testifiers. The Corps of Engineers did issue its permit, though it was accompanied by a lawsuit that is still pending. That permit was accompanied by unprecedented requirements that complicated the project, so what should have cost $1 million, cost nearly $17 million, including $1 million for permit work and $12 million for the meter-thick sand cap which was an excessive requirement and amount. Based on that experience, we anticipate future dredging in our port will be significantly more costly.

Soon after the permit was issued, Federal and State agencies, environmental groups and the port community began discussing possible disposal strategies for the port, and while that group effort is not a perfect process, it does demonstrate the importance of multilateral discussions. They are considering things ranging from sediment remediation to the use of subaqueous burrow pits for managing contaminated materials.

Informal discussions are taking place between labor and maritime representatives and public officials, including Mr. Pallone and Congressman Menendez who testified earlier. Importantly, the Nation's ports, through the American Association of Port Authorities, have developed a proposal for a national dredging policy and those specific recommendations to improve present law I recommend to this Committee.

Let me close with a couple of issues that we believe must be addressed by Congress. The Federal permit process is an obvious starting point. It should not take over 3 years for a permit to be issued.

We recommend consideration of two proposals. One is H.R. 2173 introduced by Mr. Menendez and Mr. Franks to provide a more rigorous timeframe for agency review, among other things. Another is the AAPA proposal to combine the Ocean Dumping Act with the Clean Water Act dredged material disposal provisions—this came up earlier in the hearing—to bring consistency to those programs, and to establish review and decision timeframes.

We also urge that Congress provide EPA and the Corps with the resources that are needed to tackle the contaminated sediments problem through existing authorities that include sediment inven-

tory and task force provisions of the 1992 Water Resources Development Act. Sediment remediation is an area that requires more exploration before we can conclude the extent to which it can play a role in our long-term dredged material strategy. Increased Federal support is crucial.

It is interesting to note that the Federal Government dredged more sediment than all others combined, yet the 1986 Water Resources Development Act has said that disposal facility costs are a local responsibility. This short-sighted view may save on Federal outlays but it discourages the development of more environmentally-suitable sediment management approaches.

Finally, the Port of New York and New Jersey with 6 million cubic yards of sediment dredged annually will require use of an ocean disposal site over the long term, but there is a difference between what we have today and what we envision for the future.

Today, the only location for dredged materials is the EPA designated ocean site called the Mud Dump. It is expected to reach capacity in a few years. To avert yet another crisis situation for our port, EPA will have to designate a new location before the Mud Dump designation expires. Their expeditious action is imperative. In the meantime, we are working with the Federal Government and other interests to identify short-term disposal alternatives, some such as subaqueous burrow pits might be put to use up to a year from now. Others such as containment facilities and sediment remediation can take much longer.

Obviously, what is needed is for point and nonpoint sources of pollution to be brought under control and existing hot spots of contamination eliminated.

Mr. ORTIZ. Thank you.

[The statement of Mr. Brezenoff can be found at the end of the hearing.

Mr. ORTIZ. Ms. Hansen. We will hear from you now.

STATEMENT OF JANEEN S. HANSEN, PROJECT MANAGER, BOSTON HARBOR DREDGING PROJECT, MASSACHUSETTS PORT AUTHORITY

Ms. HANSEN. Thank you. Good morning, Mr. Chairman, and members of the Subcommittee. My name is Janeen Hansen and I am the project manager for the Massachusetts Port Authority Maritime Department, managing the Boston Harbor Dredging Project. We appreciate the opportunity to tell you Mass Port's story.

Dredging is critically important to the port of Boston as it is to most American ports. In order to compete in today's international marketplace, we need to accommodate ships that are wider, longer and deeper in draft than ever before. The Port of Boston is the largest sea port in New England. In 1993, over 17 million tons of cargo passed through our port, worth over $18 billion. Upwards of 9,000 people are employed in port-related jobs. The Port of Boston also is the energy lifeline of the New England region.

I want to address for a moment the bypass issue which Congressman Menendez referred to earlier. It happened in April that a vessel was coming from northern Europe—bound for Boston. We were the first port of call. The ship ran into a storm in the north Atlantic and was delayed. When the captain got near Boston, he realized

he would not be able to bring the vessel in on the high tide that he had counted on. Rather than wait 12 hours for the next high tide, the vessel bypassed Boston altogether.

The short-term consequences of this are that we had containers sitting on our docks that were supposed to be onboard that vessel. We had customers in New England waiting for imports who had to wait several days for their boxes to be barged back up to Boston. In the longer term, if it happens again and again, ships eventually will decide to bypass Boston altogether and we will no longer be a port of call for international commerce. We can't allow that to happen, Mr. Chairman.

I want to tell you a little bit about the Boston Harbor project. We, the port authority, are the local sponsor for a project in partnership with the Army Corps of Engineers. We wish to dredge three tributary channels and the associated berths. We have 3 million cubic yards of sediment and have determined that about a million cubic yards of that are contaminated to varying degrees.

We spent over $1 million testing, analyzing and attempting to find disposal sites for that material. As yet, we have no solution. In some ways, I think we are further from a solution than when we started because, as we have eliminated options, we have failed to identify new options and are facing at this point an unknown cost to dredge Boston Harbor.

Recognizing the controversial nature of dredging projects, Massachusetts Port convened a dredging Advisory Committee in April of 1992. On that Committee, we had Federal and State regulators and resource agency people, environmental interest groups, and the maritime industry.

The intent of this group was to achieve some consensus about the need to dredge Boston Harbor and the best way to dispose of the sediments. While we did achieve moderate consensus about the need to dredge and about the testing we undertook, there was less consensus about how to interpret those test results and there was essentially no consensus about where to put the materials.

What is needed? From Massachusetts Port's point of view, the following things are needed. First would be a common framework for interpreting these test results so that there is some agreement as to what the test results mean.

Second, a single regulatory process for permitting rather than the multiple, overlapping and conflicting permit process we now face.

Third, a process that considers the needs of commercial navigation in concert with the needs of environmental protection.

Fourth, a cost-sharing formula that accounts for the environmental cleanup that happens as a consequence of dredging. To date, we get no credit for cleaning up the environment even though that happens.

Next, a cost-sharing formula that cost shares all disposal options. Under the current formula, we share with our partner, the Army Corps of Engineers, any type of ocean disposal but not any kind of upland disposal or near-shore containment facilities.

We would like to see a greater commitment by government and business to development of decontamination or what we are calling "treatment technologies". From the discussions that we have had in

our Advisory Committee, that seems to be the way of the future and we would like to see greater opportunity, greater business opportunities for solving these environmental problems.

Finally, we would like a commitment from government to move forward with dredging while we are refining these treatment technologies. The Port of Boston cannot afford to wait until the best solution is found.

In closing, I would note the Port of Boston has been an active port for over three centuries supporting commerce for New England. The future of our region depends on an active, viable 21st century port. Massachusetts Port is committed to finding an environmentally acceptable solution to the problems of dredging and dredged material disposal, but we need your help.

Thank you, Mr. Chairman, for the opportunity to testify. I would be happy to answer questions.

Mr. ORTIZ. Thank you very much.

[The statement of Ms. Hansen can be found at the end of the hearing.

Mr. ORTIZ. Mr. Carangelo. You may begin.

STATEMENT OF PAUL D. CARANGELO, COASTAL ENVIRONMENTAL PLANNER, PORT OF CORPUS CHRISTI AUTHORITY

Mr. CARANGELO. Thank you for the opportunity to speak today. I am here representing Mr. Harry Plomarity, as you know, who is retiring from his position at the Port, and after 40 years of service, is attending a Board of Commissioners' meeting today to honor that.

So on his behalf, I would like to tell you a little bit about the Port of Corpus Christi as we are here, that is, that we are the sixth largest port in the Nation with regard to tonnage. The harbor facilities are connected to the Gulf of Mexico by the 30-mile long Corpus Christi Channel and 6-mile long La Quinta Channel. They are dredged and maintained at a depth of 45 feet. That navigation infrastructure and that investment provides the movement of 77 million tons of cargo. It is the home port for one of the Navy's largest and most modern Naval facilities, the Minesweeping Center of Excellence. The maritime-related industries generate over 38,000 jobs and are responsible for a bi-county regional impact of $9.4 billion in annual sales.

And last, but not least, and importantly, the Port of Corpus Christi is one of the deepest ports in the Gulf of Mexico, as well as probably the cleanest port in the Nation. It is sited within the highly productive Corpus Christi Bay estuary which is an important and sensitive fishery resource and a major recreational destination.

The port's mission is like that of other ports; it is to foster economic development in our region. We also share that mission with a positive and proactive effort in environmental protection restoration and enhancement of the region. We have maintained the position that a sustainable economy is only dependent upon a healthy ecology and that maintaining a quality ecology depends on our economic vitality. So those two things go hand in hand.

But I would also like to point out that the Port of Corpus Christi is somewhat unique in that we conduct our business without exercising our taxing authority. We are basically a revenue-based port.

So when issues of cost come up, we get very, very sensitive about that because we feel like it is not one of those issues we would like to foster over onto the local taxpayer or onto the Federal taxpayer as well. We are very cautious about that.

In general, to answer the questions that the Committee has asked us to address, the Port of Corpus Christi, along with other ports in the United States, through the Association of Port Authorities, has closely monitored a number of the regulatory policies that come out of the Nation's capitol and also policies that occur on the State level, including the Clean Water Act Amendments, Ocean Dumping Act, Endangered Species Act, Marine Protection Sanctuaries and Research Act, and those on a Federal level and on a local level.

We look at the Texas Coastal Management Program, we look at the National Estuary Program, and we look at the Gulf of Mexico Program. All activities affect our business. We have looked at the interagency working group process on dredging and we feel that there is quite a bit of good information that is provided there.

Our port sees things very much along the same lines as the two former ports have just described. I think that some of the efforts of the working group, MARAD's, complement other initiatives and have hope in focusing on the number one problem, that is maintenance dredging of the ports and keeping them open for safe domestic and international commerce. We certainly appreciate the Administration's clear interest in improving the dredging process in that matter.

Some of the regional dredging concerns we have, we certainly aren't as focused on the contaminated issues as other ports are, but we have to recognize that those things sometimes build and develop. We have to be aware of them. In some ways, again, in answer to the question, how do the national policies affect regional things, to quote a cliche, when we hear sniffles, we get colds.

We hear things even today at this hearing that our ears perk up and we start paying attention, "Gee, what does that mean?" We are very focused on this. Of particular concern to the Port of Corpus Christi, we have successfully managed our dredged material disposal in the past, but we do view the future with concern. We are concerned that we do periodic maintenance dredging of about 3 million cubic yards per year, and it is either pumped to upland confined disposal facilities or about 25 percent goes open water in either the Gulf of Mexico in an EPA designated site or in Corpus Christi Bay.

The open water placement of the channel is still permitted, but we are concerned that it may not be and that policy may be misdirected to prevent that. We would hope that while upland placement is often perceived as a somewhat preferred if not mandatory, option, open water placement should not be eliminated unless there are environmental impacts. We certainly are supportive of the beneficial use concepts and we would hope that they would be recognized in any national policy on Federal and regional levels.

I would like to close with a synopsis of what we think is needed. We certainly appreciate being asked to testify today, but one thing we need to eliminate is the inconsistent priorities and goals that are established or at least appear to be established across the board between various agencies. It is far too complex and too expensive.

We also think that that is not protective of the environment, but we support cooperative development of these national consistent and pragmatic dredging policies. We would recommend that you look at the AAPA dredging policy that was forwarded. I think there is a tremendous resource for your utility. We think an affirmative administrative statement of policy in support of dredging and the need for streamlining the permit review is essential to broaden that agency coordination and cooperation.

Again, beneficial uses. We need to look at those funding cost sharing programs that Ms. Hansen has referred to. And in sum, that is where we are with our opinion on this matter.

Thank you very much.

Mr. ORTIZ. Thank you.

[The statement of Mr. Carangelo can be found at the end of the hearing.

Mr. ORTIZ. Dr. Germano. Please begin.

STATEMENT OF JOSEPH GERMANO, MANAGER, MARINE ENVIRONMENTAL SCIENCES DIVISION, SCIENTIFIC APPLICATIONS INTERNATIONAL CORPORATION

Mr. GERMANO. Thank you, Mr. Chairman. I appreciate the opportunity to provide testimony on West Coast dredging issues and alternative technologies for dealing with contaminated sediments and dredged material disposal.

I am sure you have heard the same from other regions of the country. The things that are plaguing dredging on the West Coast are really related to one another. First, a confused and lengthy permit process and second, a desperate need for clear guidance and effective methods for dealing with contaminated sediments, both in the initial characterization as part of that permitting process, down to identifying acceptable disposal alternatives. An important perspective to clarify right away is, one should really view the world of dredged material in three pieces.

First, on a national scale, a large majority of the material, and this is well in excess of 80 percent, is actually clean sediment and it satisfies all the requirements for unrestricted disposal, either unconfined open water or one of the beneficial use alternatives.

Second, there is a portion of material that is deemed not suitable for unrestricted disposal but it is also not a dangerous or hazardous waste by Federal or State regulations. It is viewed as contaminated or polluted. Now, this material can be handled effectively by confined aquatic disposal or near-shore options and it is in an intermediate category or gray zone of material that is causing most of the confusion that exists today.

Finally, there is a small portion of material that is classified as dangerous, hazardous waste that needs to be treated by the more expensive remediation technologies. This accounts for a relatively small volume of the material that needs to be dredged. The di-

lemma that is facing many of the coastal areas today and the mistake that is often made is that we are trying to apply the expensive remediation technologies for this Class III of materials to deal with the intermediate class of contaminated sediments.

While it is a natural desire in the regulatory world to want to classify everything in a binary fashion—in other words, it is either on or off, yes or no, hazardous or safe—the fact of the matter is that dredged material, like life, is not that simple. There is a lot of gray area and it is this gray area that is the key issue facing both the regulatory and the science community, State and Federal resource managers, the port authority and permittees and the concerned citizens' groups.

Now, there are a variety of decontamination technologies that have been or are being developed to handle the hazardous wastes, either by reducing the volume or the toxicity of the contaminants contained within the sediments, and depending upon which contaminant you are concerned with, there are different techniques that are more appropriate than others. Calls for these innovative remediation technologies range from a few hundred to several hundred dollars per cubic yard of treatment and the capacities are quite low, from a few to one or two cubic yards per day. They simply can't handle the volume of material in a typical dredging program within a realistically reasonable timeframe or a particular economically sustainable cost.

Now, while there is a clear need for environmentally safe and cost-effective remediation technologies, at the present time, it is not a viable option for dealing with other than the relatively small volumes of what can truly be classified as dangerous or hazardous waste. The three major alternatives that are available for dealing with dredged material disposal are either unconfined open water disposal, beneficial use, or a confined disposal option which consists of either aquatic, near-shore or upland disposal.

Now, each of these alternatives involves its own set of considerations and both of the first two, the unconfined open water disposal and the beneficial use, are routinely used for what is classified as the clean sediments. Unfortunately, there is still a great deal of public misconception and a lack of education concerning ocean disposal of dredged material.

There is a clear need for more public outreach and education so that resource agencies, as well as concerned citizens groups, are given sufficient information so that mutually agreeable, economically feasible and environmentally acceptable alternatives can be implemented for all types of dredged material.

Confined disposal options appear to offer the most viable solution for how to deal with this intermediate category of contaminated sediments. Confined disposal is the placement of dredged material within dikes near shore or upland confined disposal facilities, or by using confined aquatic disposal alternatives, such as subaqueous capping, the use of burrow or containment pits with subsequent capping, or deep ocean isolation.

Now, there is a wealth of information published on the design consideration to ensure successful confined disposal facilities as well as aquatic capping projects. In general, when looking at confined disposal options for contaminated sediments, there is a con-

siderable body of evidence to prove that leaving or disposing of contaminated sediments in a chemical environment that is as close as possible to their existing State favors contaminant retention. Geochemical changes that are associated with taking submerged marine sediments and bringing them upland and exposing them to air and oxygen in either upland or near-shore sites more often than not serve to mobilize rather than isolate or contain contaminants.

In summary, there is a host of problems facing those involved with or concerned about dredging, but none of them are insurmountable. On a regulatory level, there are often conflicting Federal and State guidelines in many areas of the country with no clear definition of evaluation criteria, leaving potential applicants trapped in what appears to be an analyst maze with no clear road map.

From an applicant's perspective, both on a Federal and State level, there are too many cooks involved in the regulatory process. Given this current Administration's initiative to simplify Federal bureaucracy, the dredging issue appears to be a prime target of opportunity to eliminate duplication of effort and put responsibility and guidance in one agency's hands so that clear, unambiguous guidelines can be established.

And finally, the biggest dredging problem facing society, coastal resource managers and regulatory agencies today is how to deal most effectively with contaminated sediments. In addition to needing further research to determine clearer boundaries on what makes the sediment contaminated, we need to recognize that there is no one solution that will be the best approach for addressing the problem of dredging and contaminated sediment disposal.

Just as we need to continue to develop more cost-effective and technically feasible remediation technologies to treat what is truly hazardous waste, we need to continue to explore all options available for alternative disposal technologies. Society needs to do something with its wastes and the ocean is a logical place for some of them, just as we use the air and land for other waste streams.

No single solution is going to be sensible for all kinds of wastes or at all locations. However, there is a clear need for additional public outreach and education so that people do not automatically assume that anything added to the ocean is necessarily harmful. We need to attack the problem of dredging and disposal of contaminated sediments on multiple fronts. We need a clear set of regulatory guidelines and a program headed by a single agency, source reduction to decrease the volume of sediments that are input to the harbors, continue efforts on a watershed basis to eliminate the contaminant inputs to our Nation's waterways and coastal areas, and finally additional research and confined aquatic disposal alternatives, combined with effective dredge material disposal management and monitoring strategies to ensure that we are handling the material in the most responsible manner and best stewardship possible.

Thank you.

Mr. ORTIZ. Thank you, Doctor.

[The statement of Mr. Germano can be found at the end of the hearing.

Mr. ORTIZ. Ms. Millemann, whenever you are ready.

STATEMENT OF BETH MILLEMANN, EXECUTIVE DIRECTOR, COAST ALLIANCE

Ms. MILLEMANN. Thank you, my name is Beth Millemann. I am Executive Director of the Coast Alliance, which is a national coalition of environmental leaders who work to protect the resources of the nation's four coasts: The Gulf of Mexico, Pacific, Atlantic and Great Lakes.

I am here today to represent the public's perspective on dredging issues and most notably on the topic that has gained the most attention at today's hearing, which is the problems posed by contaminated sediments. Over the years, the Coast Alliance has been fortunate in working with a network of over 200 citizen groups that include labor unions, commercial and recreational fishing organizations, citizen groups and public health groups that are very concerned about the impacts on not only water quality and the environment, but on human health from exposure to contaminants in sediments.

There is enormous support among citizens and fishermen and public health officials and the scientific community in general for the better commercial development of decontamination technologies as a way to avoid exposing humans or the environment to these dangerous pollutants. There is certainly no way that you can make a coherent argument that sediment contamination is something sadly limited to only one spot or one coast or one water body.

According to the EPA, sediment contamination is widespread. Probably every major water body has some experience with moderate to severe sediment contamination. The International Joint Commission has identified 42 of their 43 Areas of Concern in the Great Lakes as having sediment contamination. The National Research Council's Committee on Contaminated Marine Sediments concluded that sediment contamination is widespread throughout U.S. coastal waters and potentially far-reaching in its environmental and public health significance.

It is certainly true that States are grappling with sediment contamination. EPA's most recent National Water Quality Inventory released just a few months ago lists 27 different States as discussing problems with toxic contamination of bottom sediments, including almost 670 incidents of contamination caused by a number of different pollutants, including PCBs and dioxin, heavy metals and pesticides. In fact, NOAA has concluded that the highest levels of contamination for any pollutants are near the major harbors of Boston, New York, San Diego, Los Angeles, and Seattle.

I list in my testimony a couple of examples of State areas that have been examined for sediment contamination that are States of interest in particular to this Subcommittee, but the problem with sediment contamination is not just one that affects the ocean environment or the Great Lakes environment, it affects human health.

According to the National Research Council, again, there is evidence that there may be substantial risk to the ecosystem and potentially to human health due to the contamination in marine sediments. There has already been documented instances of human health problems caused by ingestion of fish that were contaminated by exposure to pollutants in bottom sediments.

Nationwide, there are already more than 2,000 fish advisories in effect. Some of those can be linked to the exposure of bottom living fish or fish feeding in the water column and their exposure to contaminants and sediments, either those that are in place or when they are dredged and dumped at disposal sites.

In fact, there was a very disturbing study done in the mid–1980's on women who consumed fish from Lake Michigan. Those women, when they had babies, were found to have babies that had reduced head circumference, learning disorders, neurological problems. In a follow-up study, those problems have persisted and the problems caused to the babies were from PCBs. The PCBs were in the fish that the women ate. The PCBs in the fish were traced to Lake Michigan sediments, a very clear sense of what the exposure of humans to sediment contamination can result in.

There has been a lot of talk today by different panelists about the need to develop decontamination technologies and, as you know, EPA's own Great Lakes National Program Office has been involved in developing decontamination technologies for the past 5 years. These technology demonstration projects are in their infancy. They are in a demonstration situation where they are being applied to five different sites in the Great Lakes on small volumes of material. There is no doubt that there needs to be a commercial expansion of these technologies.

With the commercial expansion will come a reduction in cost that will make it more commercially possible to use these decontamination technologies in large-scale applications on contaminated sediments.

There are a couple of recommendations that the environmental community would like to put forward at this point regarding particularly sediment contamination.

First, we urge the members of this Subcommittee and Congress to enact legislation to continue and expand the decontamination technologies program that EPA began 5 years ago, the Assessment and Remediation of Contaminated Sediments Program (ARCS).

It has been a small investment of money with an enormous return in terms of analyzing over 100 different decontamination technologies, applying them on a small, limited basis and giving us a hope that when they are more commercially developed, they can be the way out of the position we find ourselves in now.

We would also call on the Administration to show leadership in stressing the threats to human health and the environment from exposure to contaminated sediments as well as important concerns about the need to dredge.

Thank you very much for your time.

[The statement of Ms. Millemann can be found at the end of the hearing.

Mr. ORTIZ. Thank you very much for your testimony. I will have a couple of questions for the entire panel.

Dr. Rees' testimony indicated that a major cost problem for dredged permit applicants is that they and the Corps must bear the cost of disposing of dredged material that is contaminated by other parties.

Do most contamination problems stem from nonport-related activities and do you feel that the Federal and State agencies are

doing enough to hold these three parties accountable for their actions?

Ms. HANSEN. Well, speaking only for Boston Harbor, Boston Harbor has not been dredged in any significant way since 1982 and some parts of it have not been dredged since the early 1970's. At this point in time, it would be virtually impossible for us to identify most of the major sources of pollution, but for the urban runoff, which is everywhere and all around us.

Mr. BREZENOFF. If I may, Mr. Chairman, from the perspective of New York and New Jersey, we do believe it is possible to identify at least some of the major sources of pollution, particularly in the Passaic River that Congressman Menendez talked about. There is one site in particular.

The Federal Government, the EPA, has recently moved toward a consent order with that particular polluter. We are of course in support of that effort, but we believe it is not going far enough because it is focused on doing a cleanup job in the river and not in the bay, which has been contaminated, we believe, by that source.

Obviously, there are multiple sources. This is not a neat kind of history, but certainly if we are going to get to a point where at least the source of pollution is controlled, we are going to have to identify the sources, we are going to have to take steps to limit it, and we are going to have to cause those polluters to pay a substantial share of the cleanup. It is only fair.

Mr. CARANGELO. I would like to mention that many of these are historic activities and, by and large, the large sources of contaminants that may be entered into harbors or estuaries is now no longer happening, so it is a residual problem.

Speaking for a smaller community, certainly not one like the New England, New York-New Jersey, Atlantic or East Coast ports, it is sometimes difficult for ports in certain communities to target potential offenders. They are either not in business anymore or there is a lot of sensitivity involved.

So I think it may take the leadership to have maybe a third party begin to try to solve that there is a contamination problem caused by a third party, certainly not the ports, that there needs to be someone other than the ports being aggressive on that account.

Mr. ORTIZ. Thank you.

Ms. Millemann.

Ms. MILLEMANN. I would also like to point out that I think there are two avenues for trying to get at the source of pollution into the harbors of today. One would be strengthening the nonpoint runoff provisions in the Clean Water Act. That would go far toward stopping the pollution of tomorrow.

Another legislative initiative has been put forward by Senator John Glenn, and it passed in the Senate version of the Clean Water bill that came out of the Senate Environment and Public Works Committee which for the Great Lakes would track the movement of sediment itself down the 30 rivers that lead into the Great Lakes to try to get a handle on where the actual sediments are coming from that wind up piling up, in essence, in the ports and create a situation where they need to be dredged.

So there are, I think, immediate legislative tools that could be enacted that would help with the problem of the contamination.

Mr. GERMANO. Just to echo some of the things the other members of the panel said, in many harbors, it is very difficult to fingerprint or identify exactly what was the source of a particular contamination, and even if you can, many times that industry has gone out of business.

I think the most productive route, rather than trying to get into blaming or shaming anyone and then getting into an expensive litigation process, because they won't—obviously, they just won't lay back and say, fine, I will pay for the cleanup, that a much more productive attitude would be what Ms. Millemann outlined, is to strengthen the source inputs, these nonpoint source inputs, legislation that will prevent discharge so we don't have the problem in the future, realize that we are all in this together, and with what exists today, and let's try to do the best we can to clean it up.

Mr. ORTIZ. Thank you. I just have one more question for the entire panel, and then I will yield to my good friend from Texas and colleague, Mr. Green.

Why is it that pilot innovative technologies fail to make it beyond the demonstration stage? What must be done to make new technologies applicable to large-scale dredging operations in a cost-effective manner?

Ms. MILLEMANN. In terms of the ARCS Program, through the Great Lakes Office of the EPA, the congressional mandate was limited to small scale testing. So Congress directed EPA to go out and analyze what kind of technologies might be available, might be applicable, and then apply it specifically on a small scale basis on five designated sites in the Great Lakes.

What is needed, therefore, we believe, is a second directive from Congress to EPA and funding to take the next step, which is to say, you have weeded out those technologies that are obviously not appropriate for sediment decontamination. You have found a couple of them, perhaps more, that really show some promise. Let's bump them up to the next scale and apply them to larger quantities of materials.

And so it hasn't been necessarily a lack of vision on the part of EPA. I think it has been more a sense of this is what Congress directed us to do and that is what we have done.

Mr. ORTIZ. Thank you.

Mr. GERMANO. One of the things that seems to be a big issue is that, for all these pilot demonstration projects, when they project what the cost is of treatment, you are looking at costs that range anywhere from $150 up to $900 or $1,000 per cubic yard. And given the choice of either going through that kind of treatment or going to an upland disposal site, which would cost anywhere from $15 to $60 a yard, somebody would obviously choose to go to the upland disposal site.

So until the economics are brought down into a viable range, what is going to happen is we will fill up all the available land sites first.

Mr. ORTIZ. Are there any other responses?

Ms. HANSEN. Yes, I do have a response. In the case of the Boston Harbor project, we put that question to the Corps of Engineers who

are engineering experts on this project, and one of the major problems they see with the treatment technologies is the rate of through-put. One of the particularly, I don't want to say appealing technologies, but one that looks potentially promising can only process about 400 cubic yards a day, and yet the rate of a good dredge working 24 hours a day is about 4,000 cubic yards a day. So the technologies literally cannot keep up with the dredging equipment.

Mr. BREZENOFF. Mr. Chairman, just as a related thought, we certainly support continued emphasis and greater resource allocation for work in the area of remediation, but in light of the fact that experience to date has only been small-scale and we are looking at a unit cost that is astronomical, even in relation to the sharply increased costs that we have been facing in dredging, we would urge that continued attention be paid simultaneously to the need for short-term and medium-term approaches to allow the ports to continue to be dredged while remediation technology is pursued. It is not the panacea. It is not the magic bullet that is going to take care of this problem in the immediate future.

Mr. ORTIZ. Thank you. I would like to yield to Mr. Green for further questions.

Mr. GREEN. Thank you, Mr. Chairman. Briefly, I wanted to ask Ms. Hansen, Ms. Hansen, I was always under the impression that the amount of contaminated material was a small amount, 5 percent of dredged material. In your testimony you said it is going to be about a third of contaminated material, a third of the dredged material from the Boston project.

Ms. HANSEN. I did say that, and part of the answer is that we thought it would be a small amount when we started testing, but because of the definition of what is contaminated, the amount has grown, because the gray area, the matter that is neither completely clean nor terribly contaminated is such a big component of our dredged material. So it is definitional as much as anything.

Mr. GREEN. I know the testimony you heard earlier concerning the research on the health risks associated with either physical contact or accidental ingestion of contaminated sediments, are we having a problem with the definition or the ultimate effect on it?

Because I know that in one of the testimonies—from a number of PCBs, for example, that research is available on the impact of decontamination on humans and aquatic life.

Ms. HANSEN. We do have a problem with the definition, and that is part of what has hamstrung us in the Boston Harbor project. We don't have a tremendous amount of PCBs, but relatively speaking, we have a lot more PAHs, a lot more organics and a lot more heavy metals, and it is still a question of trying to define what are the risks to human health of various levels of these contaminants.

Mr. GREEN. Mr. Brezenoff.

Mr. BREZENOFF. If I might add, what is the least risky approach to dealing with the sediments? PCBs already exist in the Hudson River in the New York-New Jersey area. So the question goes beyond what the contaminants pose in the way of risk to what is the best management of that sediment. Is it more in the interest of the public health to take it up and secure it somewhere as opposed to leaving it where it is to move around in our port and bay area?

Mr. GREEN. Well, I can understand that because some of those sediments have been there on that Hudson River or anywhere else for 50 years and they are more encapsulated where they are because of sediment on top than in taking them out.

Mr. BREZENOFF. That is possible in some circumstances, but because we know where there are at least some point sources that flow into the river and the rivers flow into the bay, so there have been continuing sources laying still additional pollutants and contaminants in the bay areas.

Mr. GREEN. Another question. I appreciate the testimony on the permitting process because, again, my earlier question from the first panel—the second panel rather, was some of the process that you have to go through, and so I appreciate each of your suggestions on how we can continue the permitting process or make it quicker for us.

But the other question I have, and I know it affects everyone differently, is the Federal funding needed for the beneficial use, for example, of the dredged material and the implementation. I know we all would hope for more funding. Is there any testimony on what amount we are talking about?

For example, under the Clean Water Act, to provide for additional funding for beneficial use research or actually just utilizing it? Any suggestions?

Mr. GERMANO. I don't have any specific figures, and I think probably a better source of information would be from the Army Corps of Engineers experiment station. They have done a lot of research on beneficial uses and you could probably get more accurate ideas of cost from them.

Mr. GREEN. Thank you.

Thank you, Mr. Chairman.

Mr. CARANGELO. I would also point out just on that, those types of questions or answers come on a project-specific basis because they often lead to an incremental cost over and above what the Federal project cost may be, and it goes back to the local sponsor and they have to figure out, do they have enough to do that and make the project happen. If there is enough incentive for them to make the project happen, even though it would be of greater cost, then you look around for some bonding money or something.

Mr. GREEN. A type of fee?

Mr. CARANGELO. Right.

Mr. ORTIZ. Thank you. There is no question that this has been a very educational hearing this morning; very interesting testimony. We would like to work with you. I think that our goals are the same. We look forward to working with you.

That concludes the testimony for this hearing. I want to thank you for your valuable testimony this morning, for being with us today.

We will submit questions to the panel for your written responses. At this moment, I would like to include a Washington Post article that appeared in the newspaper for this hearing. Hearing no objection, so ordered.

[The information can be found at the end of the hearing on page 190.]

Mr. ORTIZ. This concludes the panel hearing for this morning. Thank you.

[Whereupon, at 12:32 p.m., the Subcommittee was adjourned, and the following was submitted for the record:]

TESTIMONY OF
ROBERT H. WAYLAND, III
DIRECTOR, OFFICE OF WETLANDS, OCEANS, AND WATERSHEDS
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO, AND THE OUTER CONTINENTAL SHELF
OF THE
COMMITTEE ON MERCHANT MARINE AND FISHERIES
U.S. HOUSE OF REPRESENTATIVES

June 14, 1994

My name is Robert H. Wayland, III. I am the Director of the Office of Wetlands, Oceans, and Watersheds at the U.S. Environmental Protection Agency (EPA). My office has responsibility for implementing the EPA ocean dumping program under Title I of the Marine Protection, Research, and Sanctuaries Act, otherwise known as the Ocean Dumping Act. My office also has responsibility for implementing §404 of the Clean Water Act (CWA), which regulates the discharge of dredged and fill material into waters of the United States.

I appreciate the opportunity to provide the Subcommittee with an overview of national issues and policy decisions affecting regional dredging efforts. I will also address the specific issues you raised in your letter of invitation concerning the status of implementation of Title V of the Water Resources Development Act of 1992 (WRDA '92), implications of CWA reauthorization on development of site management and monitoring

plans, and the status of EPA sediment disposal criteria and efforts to designate ocean disposal sites.

OVERVIEW OF THE OCEAN DUMPING ACT PROGRAM

Statutory Scheme

The Marine Protection, Research, and Sanctuaries Act, or Ocean Dumping Act, was one of a half-dozen landmark laws passed in the early 1970's to redress what were then recognized to be widespread and serious environmental problems. Our domestic ocean dumping program must also conform to the 1972 London Convention, a treaty ratified by this country that bars ocean dumping of industrial wastes as well as dumping of other materials which contain more than "trace" amounts of certain toxic compounds unless they are "rapidly rendered harmless" after dumping.

The Act requires that ocean dumping must "**not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities.**" Under the Act, EPA is to develop criteria for use in evaluating potential health and environmental effects of proposed dumping activities. The Act sets out six factors that EPA must consider in developing the environmental effects criteria. Included among these are the effects of dumping on human health and economic concerns, on marine resources such as fisheries and recreational areas, and on species diversity and

community population dynamics. The Act generally prohibits the transportation of material from the U.S. for the purpose of ocean dumping without a permit. Permitting authority is divided between EPA and the United States Army Corps of Engineers (the Corps). EPA is responsible for permitting the dumping of all material other than dredged material, and the Corps is responsible for permitting ocean dumping of dredged material. The Corps is required to use EPA's environmental effects criteria in evaluating ocean dumping permit applications.

If the Corps determines to issue a permit or conduct dredging or disposal under its programs, the Act provides that they must notify EPA of their intent to do so. EPA then evaluates the proposal and either concurs or nonconcurs with the Corps determination that the EPA environmental effects criteria have been met. EPA may condition its concurrence by requiring special management practices necessary for compliance with the environmental effects criteria. In the event that EPA nonconcurs on a dredged material disposal action, the Act provides that the Secretary of the Army may seek a waiver of the criteria from EPA. In the history of the program, this procedure has been invoked only twice.

Environmental Criteria

Both the Corps (in conducting its own dredging program) and permit applicants are required to conduct biological tests to determine whether proposed dumping will cause unreasonable degradation. The Agency specifies biological tests, or

bioassays, because they provide sound estimates of environmental effects and are suitable for routine regulatory use.

Bioassays are performed by exposing representative marine organisms in the laboratory to the material proposed for dumping in order to evaluate the toxicity of the material and to evaluate the potential for bioaccumulation. This type of approach is similar to whole effluent toxicity testing required of wastewater dischargers to inland and coastal waters under the CWA.

The results of bioassays on the dredged material are then compared to the results of bioassays conducted on a reference sediment. The reference sediment is selected in order to reflect the ambient or background conditions in the vicinity of the disposal site, absent the effects of previous dredged material discharges. In effect, the reference sediment, which represents local ambient conditions, provides the yardstick by which we judge the suitability of dredged material for ocean disposal.

In the case of toxicity tests, the mortality rates of exposed organisms are compared between the dredged material and the reference sediment. If the dredged material mortality rates are statistically the same or lower, the dredged material is considered to have passed the toxicity component of the biological effects tests. If significantly higher mortality is caused by the dredged material, the material is considered unsuitable for open ocean disposal.

In the case of bioaccumulation tests, if the levels of contaminants that have accumulated in the tissues of marine

organisms exposed to the dredged material are statistically the same as, or lower than, the tissue levels in organisms exposed to a reference sediment, then the dredged material is considered to have passed the bioaccumulation component of the biological effects tests. If, on the other hand, the bioaccumulation levels are higher, several factors must be assessed to determine suitability for disposal. Bioaccumulation in and of itself is not a significantly adverse effect; rather, we must judge the potential environmental significance of the bioaccumulation. The assessment factors we use are aimed at this purpose, and include such considerations as: persistence and number of contaminants that bioaccumulate; magnitude of bioaccumulation; toxicological importance; and, potential to biomagnify in the food web.

ONGOING AGENCY ACTIVITIES AFFECTING DREDGED MATERIAL DISPOSAL

I would now like to describe some of our specific implementation activities under this legal and scientific regime.

Dredged Material Testing Protocols

In February 1991, after notice and public comment, EPA and the Corps jointly issued a testing manual entitled "Evaluation of Dredged Material Proposed for Ocean Disposal" (commonly known as the Green Book), which provides technical guidance on how to evaluate dredged material for ocean disposal suitability. That manual revised a previous testing manual issued in 1978. We currently are developing a counterpart to the Green Book for use

in evaluating the discharge of dredged materials in inland waters of the U.S. subject to regulation under §404 of CWA, but not under Section 103 of the Ocean Dumping Act.

The Green Book procedure comprises four levels, or tiers, of increasing investigative intensity which generate information used in making permitting decisions. Tiers I and II use existing, or easily acquired information and apply relatively simple tests which attempt to predict environmental effects. If the information gathered in Tiers I and II is not sufficient to adequately characterize the potential impacts of disposal, additional data gathering and analysis is conducted in Tiers III and IV. Tiers III and IV contain biological evaluations that are more intensive, and require field sampling, laboratory testing, and more rigorous data evaluation.

The EPA regional offices, together with their counterpart Corps District offices, have developed regional implementation agreements to reflect local conditions. The tiered testing procedure and use of regional implementation agreements reflect our policy of requiring only as much data as is necessary to ensure environmentally sound dredged material disposal, and our commitment to building flexibility into the permitting process.

Under EPA's Environmental Methods Monitoring Committee, the Agency has developed a *Standard Methods Manual* for marine sediment toxicity testing. As part of this standard method development, various government, academic, and private laboratories participate in "round-robin" testing to verify the

accuracy and reliability of test methods. For example, one of EPA's most important toxicity tests, the "amphipod" test, recently underwent a series of round-robin tests and proved to be a successful predictor of toxicity in sediments. Indeed, these tests have been consistently used for several years in many regions of the country. The procedures used for these tests have been published in peer-reviewed literature and approved by the American Society of Testing Materials (ASTM). The predictive value of the tests was validated before the tests were incorporated in the 1991 Green Book.

EPA now is working to develop standardized methods under which sediment sampling and analysis will be conducted for use in all EPA programs that address sediment contamination (e.g., Superfund and RCRA). Standardizing testing methods will help reduce variability across different sections of the country, leading to more consistent testing requirements and decisionmaking.

Sediment Quality Criteria

The Agency is developing sediment quality criteria (SQC) to complement the water quality criteria traditionally developed under the CWA. SQC are being developed under the CWA §304 Water Quality Criteria program to protect aquatic organisms that live in sediment, and will provide guidance for development of State Water Quality Standards under CWA §303. EPA published a Notice of Availability in the Federal Register (59 Fed.Reg. 2652, 1/18/94) announcing the impending issuance of five criteria

documents for non-ionic compounds (dieldrin, acenaphthene, endrin, phenanthrene and fluoranthene) and requesting public comment. After the Agency has addressed the public comments, the criteria documents will be issued, with two or three new criteria added each year.

The SQC methodology has been reviewed by EPA's Science Advisory Board (SAB). The findings of the SAB support the methodology and recommend that implementing guidance be developed, the criteria be periodically updated to keep pace with advancing science, and uncertainty analyses be clearly documented and incorporated when applying the criteria in a regulatory context. The SAB recommended that these criteria not be used as a stand alone, pass-fail value for all applications. Before determining precisely how sediment quality criteria will be integrated into the dredged material regulatory regimes under the Ocean Dumping Act and §404 of the CWA, the Agency will first provide an opportunity for public comment on the options being considered.

<u>Contaminated Sediment Guidance</u>

EPA and the Corps are also developing a decisionmaking guidance for managing dioxin-contaminated dredged material. The guidance will include information on the best available analytical techniques, various disposal alternatives, and methodologies for evaluating ecological and human health effects. The two Agencies are also working on a joint technical guidance on management techniques for confined aquatic disposal sites for

dredged material. EPA has also been working on a strategy for addressing contaminated sediment that is intended to enhance coordination and consistency in decisionmaking among Agency programs such as the pesticide and toxic substances programs, Superfund, and dredged material regulatory programs.

Site Management and Monitoring Guidance

To respond to the 1992 WRDA amendments to the Ocean Dumping Act, EPA is working on an ocean disposal site management guidance document. The guidance is intended to provide EPA, the Corps and permittees with a consistent framework for managing and using ocean disposal sites. Issues addressed by the guidance include selecting and designating ocean disposal sites, permitting disposal of dredged material at such sites, managing and monitoring the sites, and surveillance and enforcement procedures. The guidance also addresses specific changes in site management practice as a result of the passage of WRDA '92.

Guidance on Alternatives to Ocean Disposal

Although a sound regulatory and scientific regime to control ocean disposal is important in protecting our coastal waters, it also is vital that alternatives to ocean disposal are planned for and developed on a regional or port-wide basis. EPA and the Corps developed and published a guidance document in 1992 addressing dredged material management alternatives. This guidance ("Evaluating Environmental Effects of Dredged Material Management Alternatives", also known as the "Framework Document") emphasizes the importance of evaluating alternative methods of

managing dredged material and provides technical guidance on evaluating the environmental acceptability of dredged material disposal alternatives. It is intended to provide a consistent framework for use in evaluating alternatives under the Ocean Dumping program, the §404 program, and the National Environmental Policy Act (NEPA). Alternatives addressed in that framework include confined disposal in estuaries and freshwater (aquatic) areas, land disposal, aquatic disposal, and beneficial uses.

Revisions to the Ocean Dumping Regulations

In addition to the above guidance development, the Agency also is working to revise the Ocean Dumping Regulations to reflect the WRDA '92 amendments and to update the technical and procedural requirements to better reflect program experience and advances made in the scientific arena over the last 17 years. A draft of the proposed regulations has just been sent to the Corps for review. We plan to propose the regulations for public comment this coming fall.

INTER-AGENCY ACTIVITIES AFFECTING DREDGED MATERIAL DISPOSAL

As I discussed previously, EPA and the Corps share dredged material permitting responsibilities. Several other agencies also have a role in permitting decisions. For instance, the Fish and Wildlife Service (FWS) at the Department of Interior (DOI) and National Marine Fisheries Service (NMFS) at the National Oceanic Atmospheric Administration (NOAA) have a review role

under section 7 of the Endangered Species Act to ensure that the disposal operation will not adversely affect protected species or their critical habitat. The Coastal Zone Management Act (CZMA) provides for consistency determinations by States before dredging permits are issued and disposal sites are designated. There is also opportunity for public comment before each permit is finally issued in which members of the public may raise questions and concerns. As is apparent, the procedural and coordination aspects involved in dredging and disposal permitting provide for the participation of multiple and varied interests in the permitting process.

As members of the Subcommittee are no doubt aware, EPA and the Corps are participating in an evaluation of the dredging and disposal permit issuance process coordinated by the Maritime Administration (MARAD). The interagency working group on the dredging process includes members from NMFS, FWS, NOAA, the Corps and EPA. The Group's mission is to review the existing dredging and disposal process and identify ways to improve it at both the national and local level. As part of this effort, the Group has conducted two rounds of outreach meetings in order to solicit information on problems, issues and solutions in the dredging process from various members of the public, including port, shipping, labor and environmental interests. The interagency working group has just completed a second round of public meetings at ten locations across the country. This endeavor has proven to be both challenging and enlightening, and we feel

confident the end result will be beneficial to the permitting process. In developing its approach to improving the dredging and disposal process, the Group has identified three overarching themes: both short-term and long-term management strategies are needed; the role of Federal, State and local government must be clearly defined and implemented; and adequate funding is critical to achieve the goals of the process.

STATUS OF WRDA '92 IMPLEMENTATION

Turning to your inquiry on WRDA '92 implementation, EPA is undertaking several activities in implementing the revisions to the Ocean Dumping Act made under WRDA '92, such as revising the Ocean Dumping regulations and developing site management and monitoring guidance. In addition to these activities, there are other efforts underway and planned aimed at implementing Title V of WRDA '92.

Title V of WRDA '92 directs EPA, in consultation with NOAA and the Corps, to conduct a comprehensive national survey of all information on the quantity, physical and chemical composition, and geographic location of pollutants in aquatic sediment. Title V further provides that EPA is to undertake a new comprehensive and continuous national program directed at monitoring the extent and severity of sediment contamination. In addition, under WRDA '92, EPA is to establish and co-chair, with a designee of the Secretary of the Army, a National Contaminated Sediment Task

Force charged with advising the Agency on a range of issues related to contaminated sediment management.

I will now describe how EPA is using existing data and modifying ongoing programs in responding to WRDA '92's provisions. We are currently focusing our efforts on collecting available information in order to develop a national inventory of contaminated sediment sites. We are developing that inventory in order to obtain a near-term assessment of the extent and severity of the problem, identify areas which may be contaminated and need further assessment, and identify areas we know are contaminated and, as a result, may be affecting ecosystems.

EPA is also gathering existing information on sources of sediment contaminants. Agency data bases such as the Toxics Release Inventory and the Permit Compliance System are being used to link contaminated sediment sites with known point source discharges. EPA will prepare a report to Congress on the site inventory as required by WRDA '92, Title V.

EPA and the Corps have not convened the National Contaminated Sediment Task Force due to lack of funding for non-Federal participants in this activity. WRDA '92 provides for Task Force participation by representatives from numerous other federal agencies, the States, port authorities, agriculture and manufacturing interests, and public interest organizations. However, we are working together closely with the Corps on a range of contaminated sediment issues. Also, the MARAD inter-agency dredging workgroup involves other federal agencies as well

as providing for public input on dredging issues. In addition, EPA and the Corps are planning to meet this summer to discuss what can be done with existing resources to convene the Task Force as soon as possible.

STATUS OF EFFORTS TO DESIGNATE OPEN WATER DISPOSAL SITES

A key mechanism used to control the environmental impacts of dumping is site designation, management, and monitoring. Under the Act, EPA is charged with designating recommended sites for ocean dumping for all materials, and the Corps is directed to use such EPA-designated sites to the maximum extent feasible. Where use of an EPA-designated site is not feasible, the Act allows the Corps, with EPA concurrence, to select a site for use on a temporary basis.

At this time, EPA has proceeded with final designation of 78 ocean disposal sites. Another 32 sites are designated under interim status. The sites that are most heavily used or in environmentally sensitive areas have been finally designated. The remaining interim sites are, for the most part, less frequently used and receive clean material.

Once a site has been designated, the placement of material at the site must be properly managed and monitored in order to protect the marine environment. The '92 WRDA amendments to the Ocean Dumping Act place increased emphasis on the importance of site management and monitoring. WRDA '92 requires that EPA and

the Corps develop long-term site management plans, with opportunity for public comment. In addition, the statute provides that these management plans must be revised and updated at periodic intervals. EPA already has developed site management and monitoring plans for a number of the sites it designated prior to the October 1992 enactment of WRDA, and will continue to develop such plans within its available resources.

CLEAN WATER ACT REAUTHORIZATION

The Subcommittee also asked about the effects the 1994 reauthorization of CWA will have on site management/monitoring plans. The CWA will continue to reduce discharges of toxics which contribute contaminants to sediments, especially from non-point sources (NPS). In addition, strengthened NPS controls should reduce the deposition of sediments to rivers and streams, and ultimately to harbors, thereby reducing the need for such frequent dredging. Thus, we see a reauthorized and strengthened CWA as helping to reduce future contaminated sediment problems.

This concludes my testimony, and I would be pleased to respond to any questions you might have.

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DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
(CIVIL WORKS)

COMPLETE STATEMENT
OF
DR. MORGAN R. REES
DEPUTY ASSISTANT SECRETARY
PLANNING POLICY AND LEGISLATION

BEFORE THE SUBCOMMITTEE ON
OCEANOGRAPHY, GULF OF MEXICO AND THE OUTER CONTINENTAL SHELF

COMMITTEE ON MERCHANT MARINE AND FISHERIES
UNITED STATES HOUSE OF REPRESENTATIVES

ON

IMPACT OF THE OCEAN DUMPING ACT AND FEDERAL DREDGING POLICY
ON REGIONAL DREDGING ISSUES

WASHINGTON, D.C.
JUNE 14, 1994

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

INTRODUCTION

I am Morgan R. Rees, Deputy Assistant Secretary, Planning Policy and Legislation, in the Office of the Assistant Secretary of the Army for Civil Works. Accompanying me today, also from the Assistant Secretary's Office, is Michael Davis, Assistant for Regulatory Affairs. We are pleased to appear today to provide information as requested in your letter of invitation to Acting Assistant Secretary Dr. John H. Zirschky. The Congressional interest in the Army's navigation and regulatory missions, which are carried out through the Corps of Engineers, is very much appreciated.

We all recognize that the nation's ports are a vital link to domestic and international trade. Foreign trade now accounts for more than 20 percent of our Gross Domestic Product and is expected to make up an even greater share of our economy in the future. An essential element in our trade-dependent national economy is our nation's harbors, which must be dredged to remain open for trade. We also recognize that our nation's aquatic and other coastal resources are a critical asset which must be protected, conserved and restored. Balancing the need for viable ports and the need for environmental protection has become an increasingly difficult challenge. Factors contributing to the

challenge are increasing concern with the environmental problems affecting coastal areas and ocean waters, heavy population shifts to coastal areas, the increasing need for navigation project improvements to meet the needs of world trade, and increasingly tight Federal, State and local budgets. As a result, dredging and dredged material disposal have become contentious problems encompassing all phases of harbor development and operation from planning new projects to maintaining existing ones.

While the problems are serious and difficult, we believe we are making substantial progress in solving them. President Clinton, in a recent letter to the American Association of Port Authorities, indicated that we can find a way to dredge our nation's ports without compromising environmental protection. We certainly share the President's views on this issue and are optimistic that both environmental protection and economic objectives can be attained. Recent Army/Environmental Protection Agency initiatives on improving the dredging process and the efforts of the Interagency Working Group on the dredging process emphasize the Administration's commitment on this issue.

After summarizing Army's responsibilities related to the management of dredged material, including our thoughts on disposal needs in the next five to ten years, our testimony today will concentrate on national regulatory issues, mid-term and long-term solutions for future dredged material disposal, long-term dredged material management options, and the status of efforts to designate open water disposal sites and to construct upland disposal facilities.

ARMY RESPONSIBILITIES RELATED TO DREDGED MATERIAL

The Army's two major activities directly involved in the management of dredged material are the national dredging program for constructing and maintaining the Federal portion of the nation's extensive navigation system of commercial channels, harbors and ports and the national regulatory program. While we have identified these two programs separately, they are closely interrelated and necessarily integrated.

Integrated into the requirements of the national dredging program and the Army's regulatory program for non-Federal dredging is responsibility for compliance with over 20 Federal environmental protection and conservation statutes. Some of these statutes are the Clean Water Act (CWA), the Marine Protection, Research and Sanctuaries Act (Ocean Dumping Act), the National Environmental Policy Act, the Endangered Species Act, the Coastal Zone Management Act, the National Marine Sanctuaries Program Amendments Act and the National Historic Preservation Act. In addition, implementation almost always requires approvals under various State programs and regulations.

In executing the programs, we work closely with the EPA, the U.S. Fish and Wildlife Service and various elements of NOAA. The processes for implementing the programs are also designed to provide full involvement of State and local agencies and the public at large.

NATIONAL DREDGING PROGRAM

Activities under the national dredging program begin with a study of the economic, environmental, and engineering feasibility of potential harbor developments. If, based on the study, Congress and the President find that it is in the national interest to construct the harbor improvements, a project is authorized through legislation. This establishes the project as an integral and important part of the national economic and transportation infrastructure and that the project is consistent with national economic and environmental policies.

In carrying out this important program, the Corps of Engineers applies a rigorous analysis established under various statutes to ensure a quality environment along with economic development. The national program currently includes the construction of new or the improvement of existing projects, maintenance of over 200 deep draft coastal ports, over 600 shallow draft harbors, and nearly 11,000 miles of inland and intracoastal waterways.

ANTICIPATED DREDGED MATERIAL DISPOSAL NEEDS

Maintenance and improvement of ports and navigation channels are achieved primarily through dredging. The Army is responsible for dredging about 300 million cubic yards of material per year on average on coastal and inland harbors and channels. Of this total, one to four percent (3 to 12 million cubic yards) is considered contaminated to the extent it requires special handling. In addition to the Federal navigation dredging, the Army permits the non-Federal dredging of about 100 million cubic yards of dredged material across the nation each year. Many of the permitted activities are related to maintaining or improving the non-Federal elements of the commercial navigation system. While it is difficult to predict whether dredging needs over the next five to ten years will deviate significantly from the historic dredging rates and volumes, the Corps continues to plan for expected dredged material disposal volumes based on previous data.

Dredging and disposal of dredged material have been highly controversial for many years. The Corps, EPA and others have worked hard to resolve many of the contentious issues and have had some good successes. However, many issues remain. We believe most of the remaining issues can be resolved ultimately by the continued cooperative efforts of all interests. One of

the most difficult issues with which we must contend is how to curtail the release of pollutants at their source, before such pollutants can contaminate channel sediments. Neither the Corps of Engineers nor the applicants for permits to dredge the non-Federal portions of our ports and harbors have any responsibility for most of the pollution, yet they bear the burden of costly and contentious disposal of the resulting contaminated sediment. Other Federal and State agencies with authority and responsibility for pollution control must continue and enhance their activities to clean up our nation's waters, and the polluters must be held accountable for the pollution they cause.

To complicate matters, our technical capability to detect contaminants and assess the potential for contaminant-related impacts associated with dredged material disposal has improved drastically. Effective controls over point and non-point sources of pollution through existing Federal and State programs are essential. Without them, the costs associated with dredged material disposal can be expected to rise due to greater amounts of dredged material requiring testing and increased special handling and disposal of dredged material, e.g., confined disposal facilities or capping in lieu of open water disposal.

NATIONAL DREDGING POLICY

Federal agencies have varying missions and mandates focused on both the need to develop the Nation's ports and harbors and the need to protect, conserve and restore aquatic and other coastal resources. There is sore perception that these missions and mandates are in conflict. There is a need to establish a national policy on dredging for the development and management of the Nation's ports that will establish guiding principles to reconcile what are perceived as conflicting mandates. The Interagency Working Group on the Dredging Process which was formed by Secretary of Transportation Federico Peña in the fall of 1993 is providing an excellent forum to articulate a national dredging policy. The Group includes, in addition to the Maritime Administration representing the Department of Transportation, the Army, EPA, the Department of the Interior, and the Department of Commerce. The Working Group is expected to present its recommendations to Secretary Peña and the other department heads this summer.

REGULATORY PROGRAM

The Army administers its regulatory program through the Corps of Engineers. This responsibility includes authority to regulate: (1) dredging, the construction of structures, and other types of work in navigable waters of the United States (tidal waters and waters previously, currently, or potentially capable of providing for the transportation of interstate commerce) pursuant to section 10 of the Rivers and Harbors Act of 1899;

(2) the discharge of dredged or fill material into waters of the United States (the territorial sea, all inland and near coastal waters located landward of the baseline of the territorial sea, wetlands adjacent to them, and isolated waters) pursuant to section 404 of the CWA; and, (3) the transportation of dredged material for the purpose of ocean dumping, seaward of the baseline of the territorial sea, pursuant to section 103 of the Ocean Dumping Act. The baseline of the territorial sea may generally be defined as the line on the shore reached by the ordinary low tides.

The Corps evaluation of a permit application proposing dredging and dredged material disposal activities involves determining whether the project complies with the Corps permit regulations and, for disposal in the oceans, the ocean dumping criteria, or, for disposal in inland and near coastal waters, the Section 404(b)(1) Guidelines.

To comply with its permit regulations, the Corps must conclude that the project is not contrary to the public interest. Public interest factors considered with respect to dredged material contaminant-related impacts include wetlands, water quality, water supply and conservation, safety, and fish and wildlife impacts, and economics.

To comply with the ocean dumping criteria, the Corps must determine that disposal of dredged material will not unreasonably degrade or endanger human health, welfare, amenities, or the marine environment, ecological systems or economic potentialities. When it is suspected that dredged material proposed for ocean disposal is contaminated, the Ocean Dumping Act requires testing, utilizing testing guidance provided in a manual entitled "Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual", commonly known as the "Green Book." The Green Book utilizes biological testing, with chemical analysis as necessary, to provide effects-based conclusions, i.e., the potential for contaminant-related water column, benthic toxicity and benthic bioaccumulation impacts, within a tiered framework.

To comply with the Section 404(b)(1) Guidelines, the Corps must determine that disposal of dredged material at the proposed site is the least environmentally damaging, practicable alternative; complies with State and Federally established water quality and toxics standards; will not result in significant degradation of the aquatic environment; and, will be conducted and conditioned so as to minimize potential adverse impacts to the aquatic ecosystem. The Section 404(b)(1) Guidelines also require chemical and biological testing when there is reason to believe that material proposed for disposal in inland and near coastal waters is contaminated. In recognition of the need for greater consistency in testing procedures between inland and near

coastal waters and the oceans, as well as between regions of the country, the Corps and EPA have formed a working group that is completing the draft of a manual entitled "Evaluation of Dredged Material For Discharge in Inland and Near Coastal Waters - Testing Manual", or "Inland Testing Manual". This manual is patterned after the Green Book. The Corps and EPA intend to publish the manual in the Federal Register for comment later this summer.

Additionally, any discharge of dredged material proposed for inland waters and near coastal waters and regulated by the Corps under the CWA must be certified by the appropriate State as complying with the applicable provisions of section 401 of the CWA. Most of the coastal States also administer coastal zone management programs under the Federal Coastal Zone Management Act. Federally regulated discharges of dredged material that may directly effect a Federally approved coastal zone must also be determined by the appropriate State to be consistent, to the maximum extent practicable, with that program prior to approval of the regulated activity.

The Corps regulatory process includes pre-application consultation to discuss the project and regulatory requirements with the intent of avoiding application evaluation delays. A public notice is prepared to describe the project and solicit comments from Federal, State and local agencies and groups and the public. The Corps may also conduct a public hearing if the Corps requires additional information to evaluate the proposed project. After information, including any letters, meetings, and coordination with the applicant and Federal, State and local agencies, is collected, the project is evaluated to render determinations regarding public interest and ocean dumping criteria compliance or Section 404(b)(1) Guidelines compliance. Testing of dredged material is conducted if the presence of contaminants is suspected, and the results are considered, in conjunction with other case-specific information, to effect decisions with regard to managing the dredged material. This may include alternative disposal sites, e.g., upland, inland and near coastal aquatic sites and the oceans, and alternative methods, e.g., capping or treatment of the dredged material. The Corps subsequently makes a decision to issue, issue with conditions, or deny the subject application; completes the required NEPA documentation, i.e., environmental assessment or environmental impact statement; and prepares statements of compliance with the Section 404(b)(1) Guidelines or the ocean dumping criteria and a statement of findings.

NATIONAL REGULATORY ISSUES

We appreciate and share Congressional concerns regarding the efficiency and timeliness of permit decisions for dredging and

dredged material disposal projects. We can assure you that the Army remains committed to effecting permit decisions on dredging projects in a timely fashion and in a manner that does not diminish our protection of the environment. In this regard, we are working with EPA and other Federal agencies to improve the regulatory process.

As you may be aware, we are implementing revisions to the Army's Regulatory Program resulting from President Clinton's Federal Wetlands Policy Initiatives, announced on August 24, 1993. While developed in the context of wetlands regulation, the improvements will also result in a more fair, flexible and efficient approach to dredging permits. As part of the President's Wetlands Plan, the Corps and EPA provided joint guidance to field offices which describes the flexibility afforded by the Section 404(b)(1) Guidelines (Guidelines) in rendering permit decisions. The guidance emphasizes that the level of analysis for permit decisions will be commensurate with the relative severity of the potential environmental impacts to waters of the United States. Potential impacts to ocean waters are likewise evaluated in conjunction with the ocean dumping criteria.

The Corps of Engineers is producing regulations which will generally require that most decisions on permit application decisions be made within 90 days of the date of the public notice. In addition, the Corps is producing regulations which establish an administrative appeals process whereby applicants would be able to appeal Corps permit denials. These regulations are currently scheduled to be proposed in the Federal Register later this summer. The Corps is committed to implementing these provisions. These provisions, in conjunction with the joint guidance on Guidelines flexibility, will improve Regulatory Program efficiency which will also benefit permit applicants whose projects involve wetlands or dredging and dredged material disposal.

NEW YORK AND NEW JERSEY HARBOR

A recent action regarding regulation at the Port of New York and New Jersey has both local and national significance. In response to unresolved permit applications in New York and New Jersey Harbor, we convened a meeting on March 25, 1994 with EPA. Attendees included representatives from headquarters, field, and laboratory elements of both agencies. The result of the meeting was an "Action Plan For Resolving New York Harbor Permit Issues" (Action Plan), dated April 8, 1994. While the Action Plan was formulated to address dredging projects in the Port of New York and New Jersey, elements of the plan are applicable to national dredging and dredged material disposal issues as well. For example, EPA issued an interim final rule and a proposed rule in the Federal Register on May 20, 1994, which clarify that

bioaccumulation testing of the suspended particulate phase is not required. Following this action, the Corps New York District immediately issued seven of 28 pending permits in the Port of New York and New Jersey. In addition, the Corps and EPA have formulated testing protocols to address the problem of excess ammonia in sediments to be tested, and our respective agency laboratories are working with private labs to improve the consistency and dependability of toxicity testing of benthic-dwelling animals.

As called for by the Action Plan, the Corps and EPA recently completed guidance addressing the "shelf life" of dredged material testing results. This guidance clarifies that permittees are not required to retest their sediments every three years. Rather, there will be a re-evaluation in order to determine if re-testing is appropriate. That re-evaluation uses existing information to determine if changed circumstances, e.g., spills or new discharges, might have altered the character of the sediment sufficiently to warrant actual re-testing. We are also beginning work on a draft memorandum of agreement with EPA to provide for more efficient coordination between the Corps and EPA regarding Corps regulated activities, as well as Federal dredging and dredged material disposal activities.

In addition to the above, the Corps and others are participating with EPA in developing a risk-based approach to evaluate the suitability of disposal of sediments containing contaminants, including dioxin. The Army believes a standardized approach for establishing contaminants management thresholds, rather than a nationwide standard, best addresses the unique, region-specific factors that may result in a contaminant having more harmful impacts in some areas than others.

Finally, in conjunction with the Action Plan, our respective agencies have committed to pursuing both short-term dredged material disposal alternatives, e.g., subaqueous borrow pits, and long-term actions, e.g., Dredged Material Management Forum and Dredged Material Management Plans, to actively involve all interested parties in the formulation of long-term dredged material management plans. Focusing on the problems concerning dredging permit applications in the Port of New York and New Jersey has demonstrated the inefficiency and frustration associated with attempting to resolve major technical and policy issues within the context of the permit application evaluation process. This approach to issue resolution has also demonstrated that these broader program issues are best addressed during long-term planning.

We share your desire to avoid permit application evaluation delays in the future. Many of the actions discussed above, most importantly development and implementation of long-term dredged material management plans, cannot be achieved by the Federal

regulatory agencies alone. These actions will require commitment, creativity, and energy from all involved parties with a stake in dredging and protecting the aquatic environment. We will continue our efforts in support of the development of necessary partnerships, as well as for communication and planning efforts for managing dredged material. Again, we believe such administrative initiatives are greatly improving Regulatory Program responsiveness to dredging and dredged material disposal projects without sacrificing environmental protection.

MID-TERM AND LONG-TERM SOLUTIONS FOR FUTURE DREDGED MATERIAL DISPOSAL; LONG-TERM DREDGED MATERIAL MANAGEMENT OPTIONS; AND STATUS OF DESIGNATION OF OPEN WATER DISPOSAL SITES AND CONSTRUCTION OF UPLAND DISPOSAL FACILITIES

To provide effective management for the volumes and types of dredged material that we must deal with and to meet differing regional and local needs, we must continue to use all of the available options for both the mid-term and long-term on a project- and permit-specific basis.

At a National level we are concentrating on a number of different areas to address the problems of dredged material management. These include making the dredged material evaluation, testing and permitting process more efficient; developing a national dredging policy; improving interagency and external coordination; promoting dredged material management planning; reconsidering policies for financing the cost of dredged material disposal; promoting the beneficial use of dredged material and fostering research on dredged material disposal and contaminated sediments.

EVALUATION AND TESTING

Our ongoing initiatives with EPA to revise and update the Federal environmental guidance for testing and evaluating proposed discharges of dredged sediment are of high priority. The Green Book was originally published in July 1977 and most recently revised jointly by the Corps and EPA in the spring of 1991. It contains important technical implementation guidance for testing sediments proposed for ocean disposal. The Green Book utilizes biological testing, with chemical analysis as necessary, to provide effects-based conclusions within a tiered framework. Under a tiered framework, more sophisticated testing is used only when necessary for decision making. Several regional Green Book implementation manuals, which are an important component of this national process, have been completed.

There are many similarities in the procedures for dredged material testing between inland and near coastal waters and the

oceans; however, differences do exist. This is due to the slightly different regulatory approaches under the implementing regulations of the CWA and the Ocean Dumping Act. To further enhance the consistency in testing procedures, the Corps and EPA have formed a working group that is completing a draft "Inland Testing Manual" that is patterned after the Green Book. We believe that implementation of the Inland Testing Manual will provide even more consistency for dredged material testing. The availability of this draft manual for review will be announced in the Federal Register this summer.

The Corps and EPA recently issued a comprehensive technical management strategy, entitled, "Evaluating Environmental Effects of Dredged Material Management Alternatives - A Technical Framework," designed to identify environmentally acceptable disposal options for all dredged sediments. This document serves as the overall umbrella guidance in managing contaminated sediments. Our approach is to develop and apply a consistent evaluation framework, not only for sediment contamination testing, but also for providing effective controls of contaminated sediments for the full array of management options. We believe that this document, in conjunction with the testing guidance noted, will be particularly helpful in any future federal initiatives involving management of contaminated sediments.

INTERAGENCY AND EXTERNAL COORDINATION

Another key element in improved dredged material management is better interagency and external coordination. Successful dredged material management will require the cooperation of the ports, Federal and State regulatory and resource agencies, state governors, and other elected officials as well as the support of the general public. We have several initiatives underway to build these kinds of partnerships at the national and regional level. For example, over the past year we held a series of regional meetings with ports throughout the country to build a stronger partnership and resolve issues of mutual concern. We now contemplate a second series of regional workshops that will not only include the Corps and the ports but also Federal and State regulatory and resource agencies. We believe these kinds of workshops can spark commitments to stronger partnerships and trust among the Corps, the ports, and the State and Federal agencies. On a regional level, the Corps is participating with other Federal, State and local agencies and groups in regional forums which have been established at a number of locations to address dredging and disposal issues and examine future disposal. These successful local coordination mechanisms must be replicated in other regions. Improved coordination is also a major focus of the Interagency Working Group on the Dredging Process and the group has developed a number of options to improve interagency and external coordination.

DREDGED MATERIAL MANAGEMENT PLANNING

One of the key factors that has contributed to the seriousness of the problems we are facing at a number of locations is the absence of a comprehensive plan for dredged material disposal. It is clear that existence of such a plan would aid greatly in the disposal of dredged material. The Corps has recognized this challenge and issued dredged material management planning guidance last year which set a goal that every Federal project or group of Federal projects have an adequate dredged material management plan to meet immediate needs and projected needs for a 20 year period. These dredged material planning efforts, to the extent they address maintenance of Federal channels, will be Federally funded and reimbursable from the Harbor Maintenance Trust Fund. Currently, there are dredged material management planning efforts ongoing at 13 locations, and seven others are included in the President's budget for Fiscal Year 1995.

BENEFICIAL USE OF DREDGED MATERIAL

The Army has informally employed the concept of beneficial uses of dredged material within its national dredging program for many years and as formal policy since 1968. A recent Office of Technology Assessment study reported that about 95 percent of the sediments dredged from coastal waters each year (about 150 million cubic yards for both Federal projects and permitted activities) are considered suitable for a wide range of beneficial disposal options. Traditional beneficial uses would include wetland and upland habitat development, beach nourishment, land creation, and construction aggregate and industrial use. More recent efforts have included the use of clean dredged material from a nearby Federal or permitted project to cap contaminated material outside the navigation channel.

The Army's authority for beneficial uses of dredged material was originally limited to projects incidental to maintenance or construction and where there was no increase in cost to the Federal project or where the local sponsor would pay the increment of increased cost. Section 145 of the Water Resources Development Act (WRDA) of 1976, as amended, authorized beneficial placement of dredged material on beaches. This authority, justified primarily as hurricane and storm damage reduction, requires that the beach remain in public use and that a non-Federal sponsor provide 50 percent of incremental costs. Section 1135 of the 1986 WRDA, as amended, provides further opportunities for beneficial uses of dredged material. Finally, based on an initiative from the Army, a provision (section 204) was included in the WRDA of 1992 to authorize the Army to participate in projects to use dredged material for aquatic habitat and wetland creation, restoration and protection. Seventy-five percent of the incremental cost of the beneficial use would be paid by the

Corps and 25 percent by a non-Federal sponsor. Any operation, maintenance, replacement and rehabilitation costs would be 100 percent non-Federal. The authority is applicable to the construction, operation, or maintenance of an authorized Federal navigation project and carries a $15 million annual appropriation limit. The Fiscal Year 1994 appropriations included $3 million for implementation. We have been working with the EPA, States and others to address issues associated with beneficial uses of dredged material and to improve the use of the authority.

DEVELOPING EFFECTIVE POLICIES FOR THE FINANCING OF DREDGED MATERIAL DISPOSAL

Federal and non-Federal responsibilities for dredged material disposal vary from project to project, port to port and region to region, depending on when and how the project was authorized. Consistency is definitely lacking. Another problem is the varying Federal and non-Federal shares depending on the disposal method. As a general rule, open water disposal costs are borne by the Federal government, whereas, upland and confined disposal costs are usually non-Federal. This creates a strong economic incentive for a non-Federal sponsor to support open water disposal. The need for a reexamination of Federal law and policy with respect to dredged material disposal areas was recognized in section 216 of the WRDA of 1992. Section 216 directed the Secretary of the Army to conduct a study of the need for changes in Federal law and policy concerning dredged material disposal. The Corps of Engineers has initiated this study and will complete it in Fiscal Year 1995. The port community has already proposed cost sharing changes for confined disposal facility construction.

TECHNOLOGY DEVELOPMENT AND TESTING

The Corps of Engineers has developed a research base over the last two decades that emphasizes the identification, assessment, and management of contaminated sediments. Contaminated sediments are defined in relation to our navigation program as those that demonstrate an unacceptable adverse impact on human health or the environment. Because of its research and its active participation in the London Convention and other international efforts, the Corps is recognized as an expert in dealing with contaminated sediments.

Environmental research on dredged materials in the 1970's was broad in scope, including the basic understanding of ecological impacts associated with management of clean and contaminated dredged material. Research in the 1980's focused on contaminated sediments. This work was done jointly with EPA to enhance the identification, assessment and management of contaminated materials. Research efforts in the 1990's focus on highly contaminated materials, emphasizing chronic/sublethal

effects and genotoxicity evaluations. It continues efforts from the 1980's to enhance capability for cleanup and remediation of hot spots, risk analysis, endangerment assessments, and treatment technology. The Corps of Engineers, in support of EPA's Assessment and Remediation of Contaminated Sediments program on the Great Lakes, has considered and/or researched to varying degrees the following treatment technologies: *in situ* vitrification; in line particle separation and pipeline injection; bioremediation; incineration; extraction; thermal desorption; and well injection and ocean disposal in abyssal plains. We do not view any single dredged material treatment technology or management alternative as a panacea. Rather, each option must be considered on a project specific basis applying environmental protection, engineering practicability, and economic criteria.

CONCLUSION

The Army will continue to execute its responsibilities to protect the environment, recognizing the critical national need to maintain a strong port, harbor and navigation system to continue our nation's role as the leading world economic power.

Mr. Chairman, and other members of the Subcommittee, this concludes our statement. Mr. Davis and I would be happy to answer any questions you or the other subcommittee members may have.

STATEMENT

OF

JOAN B. YIM

DEPUTY MARITIME ADMINISTRATOR

ON

BEHALF OF

THE

MARITIME ADMINISTRATION

DEPARTMENT OF TRANSPORTATION

BEFORE THE

SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO

AND THE OUTER CONTINENTAL SHELF

OF THE

COMMITTEE ON MERCHANT MARINE AND FISHERIES
U.S. HOUSE OF REPRESENTATIVES

DREDGING PROCESS HEARING

JUNE 14, 1994

DEPARTMENT OF TRANSPORTATION
STATEMENT OF THE DEPUTY MARITIME ADMINISTRATOR
JOAN B. YIM
BEFORE THE SUBCOMMITTEE ON OCEANOGRAPHY,
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MERCHANT MARINE AND FISHERIES COMMITTEE
U.S. HOUSE OF REPRESENTATIVES
DREDGING PROCESS HEARING
JUNE 14, 1994

Good morning. I would like to thank members of the Subcommittee for the invitation to testify today. My name is Joan Yim and I am the Deputy Administrator of the Maritime Administration in the Department of Transportation.

About 95 percent of all United States exports and imports pass through U.S. ports, and the Clinton Administration regards ports as a tremendously valuable national economic asset -- one that must be preserved and strengthened to meet our trade and defense needs. Dredging our nation's harbors is an important part of Secretary Peña's goal to tie America together through integrating all modes and emphasizing intermodal connections at ports. The Secretary also has a goal of actively enhancing our

environment by harmonizing transportation policies and investments with environmental concerns.

Last year Secretary Peña, in conjunction with fellow Cabinet members and agency heads, established a Federal Interagency Working Group on the Dredging Process, which I chair, to review the dredging authorization and permitting system and recommend ways of improving it. The objective of the Working Group is to bring greater certainty and predictability in the dredging authorization and dredged material disposal processes, consistent with the goal of environmental protection. The Group has taken a one-team approach which the Administration is fostering by asking everyone to take a fresh look at the dredging process and consider innovative changes. It is precisely because it should not take 20 years to get a project under way that we need to stand back and look at the system of how one gets from project proposal to implementation for new navigation projects. Lengthy delays in permit processing should be avoided.

The Group's participating agencies include the U.S. Environmental Protection Agency, the Department of the Interior's Fish and Wildlife Service, the Department of Commerce's National Marine Fisheries Service and the Office of Ocean and Coastal Resource Management, the Department of the Army's Corps of Engineers, and the Maritime Administration, which is the lead agency.

To carry out its mission, a two-tier structure was formed consisting of a policy steering committee, comprised of persons at the Presidential appointee level, and a working committee, comprised of career officials. The steering committee is setting the overall direction and will prepare recommendations for near-term and long-term improvements to the dredging authorization and permit processes in July.

The Group completed a round of 11 outreach "listening sessions" in January and February of this year which helped identify issues and potential solutions. During the first round, the public emphasized the following concerns:

o A modern and efficient port system is essential to national and local economies;

o The need for consistent protocols and standards for the classification and management of contaminated sediments;

o The dredging permitting process needs to be made more predictable;

o Beneficial uses of clean dredged material should be encouraged through federal funding and decision-making processes;

o Funding mechanisms must be found for alternative disposal strategies and site remediation; and

o Upstream sources of pollution must be brought under control if the contaminated sediments problem is to be solved over the long term.

The first round clarified that the major issues also include the perceived lack of a national port dredging policy and the potential negative impacts of contaminated sediments on human health and the environment. In the second round of 10 meetings held in April

and May public comments were received on an options paper developed by the Working Group. This input will help the Group develop its final recommendations.

Each of the 28 options in the paper addresses one of the following five issue areas:

- **Federal Interagency and External Coordination** - options discuss ways to improve overall working relationships among and within agencies, as well as with non-governmental organizations and the general public.
- **Proactive Local Planning and Coordination** - options concern development of effective advanced planning mechanisms which foster greater State, local, and public participation.
- **Dredged Material Disposal** - options address how to plan and more effectively manage dredged material disposal decisions, with a focus on contaminated sediments, and consider alternatives to ocean dumping of contaminated

dredged material, such as, confined disposal facilities and use of decontamination technology.

- **Dredging Policy** - options discuss what is an appropriate national policy with respect to dredging, and at what level of government should decisions be made for allocating resources to undertake dredging.
- **Funding and Project Development** - options include whether policy and procedural changes should be adopted for funding the development, improvement, and maintenance of deep draft navigation channels and harbors, including the disposal of dredged material; considering changing or devising new cost-sharing requirements for funding dredging-related activities; and considering using the Harbor Maintenance Trust Fund to support additional activities.

As I noted earlier, a report of recommendations is to be presented to Secretary Peña in July.

Our aim is to develop a set of recommendations that provides short term and long term solutions, including regulatory or statutory changes and we look forward to working with you on these proposals. I would be pleased to respond to any questions you may have.

Thank you.

U.S. Department of Transportation
Maritime Administration

The Interagency Working Group on the Dredging Process

OPTIONS PAPER

May 1994

List of Acronyms

AAPA	American Association of Port Authorities
CORPs	Corps of Engineers
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DOC	Department of Commerce
DOI	Department of the Interior
EPA	Environmental Protection Agency
EQP	Equilibrium Positioning Approach
FWS	Fish and Wildlife Service
HMTF	Harbor Maintenance Trust Fund
ISTEA	Intermodal Surface Transportation Efficiency Act
LTMS	Long Term Management Strategies
MARAD	Maritime Administration
MPRSA	Marine Protection, Research and Sanctuaries Act
NED	National Economic Development Plan
NGOs	Non-Government Organizations
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OCRM	Office of Ocean and Coastal Resources Management
P&G	Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies
RHA	Rivers and Harbors Act
SQC	Sediment Quality Criteria
WRDA	Water Resources Development Act

Comments on this options paper should be sent no later than June 15, 1994 to:

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INTRODUCTION

Overview

Ports are a vital link to domestic and international trade in peace time and of strategic importance during a national defense emergency. About 95 percent of all United States exports and imports pass through U.S. ports. Access channels and berthing areas are essential marine transportation components of the port system. In order for the port system and vessel operations to function in a safe and efficient manner, timely and effective dredging and dredged material disposal are necessary. It has become increasingly difficult for the Federal Government and for deep-draft port facility owners to proceed with these essential dredging operations in a timely and cost-effective way, consistent with administrative and environmental requirements for a number of reasons.

Over the past two decades, a number of factors have complicated the operation and maintenance of the nation's harbors, particularly in the area of the management of dredged material. These factors include increases in the demands of commerce, rapid evolution of shipping practices (containerization and intermodalism), increasing environmental awareness and mounting environmental problems affecting coastal areas and ocean waters, heavy population shifts to coastal areas, and generally increased non-Federal responsibilities in the development and management of navigation projects. As a result, management of dredged material has often become a contentious problem encompassing all phases of harbor development and operation, from planning new projects to maintaining existing ones.

This Administration has voiced a very clear interest in improving the dredging process in a manner consistent with environmental protection. President Clinton, in a recent letter to the President of the American Association of Port Authorities (AAPA), expressed his commitment to this issue.

An integral step in the Administration's effort to make the dredging and disposal process work more efficiently was the establishment of the

Excerpts from President Clinton's Letter to the AAPA, 3/25/94.

"...Dredging, the need for long-term disposal solutions, and disposal of contaminated sediments are a national concern. I am convinced that we can find a way to dredge our Nation's ports without compromising environmental protection.

Our Nation's ports are a key link in the intermodal transportation chain and can only realize their full potential as magnets for shipping and commerce if our Nation's harbors are dredged and open for trade.

Too often, dredging projects are caught up a regulatory tangle. My administration will work to develop improved long-term management plans that will help avoid delays in important navigation projects without compromising the environment.

To achieve our shared goals of enhancing both economic competitiveness and environmental protection, all parties to the dredging debate must look beyond traditional narrow interests. I am calling on Federal agencies to double their efforts to resolve the navigational and environmental concerns that have long stymied dredging, and urge the State, local, port, environmental and other interested groups to continue their joint efforts to find solutions to these problems..."

Interagency Working Group on the Dredging Process (Group). The Group's mission is to review the existing dredging and disposal process and identify ways to improve it at both a national and a local level. As part of this effort, the Group has conducted outreach meetings to solicit information about problems, issues, and solutions on the dredging process from the public including port, shipping, and environmental interests.

This document summarizes the information obtained from the first series of outreach meetings held in January and February 1994 and presents a spectrum of options which could be used to address some of the problems identified with port development and the dredging and disposal process. The purpose of the document is to provide a general base of understanding for all interested parties who will attend the second series of outreach sessions to be held in May and June 1994. A final report of recommendations will be prepared in July, 1994.

The document is organized into four major sections. The first section is an introduction which presents the mission of the Group and describes the outreach meetings. The second section provides an overview of how the Group assimilated the results of the first round of outreach meetings. The third section presents a general background discussion of five major issue areas. The fourth section sets forth options which will be discussed at the second round of outreach sessions.

The Interagency Working Group on the Dredging Process

U.S. Secretary of Transportation Federico Peña, in cooperation with other Cabinet members and Agency heads, convened the Group in the Fall of 1993. The Group consists of representatives from the Environmental Protection Agency (EPA); the Department of Interior's Fish and Wildlife Service (FWS); the National Marine Fisheries Service (NMFS) and the Office of Ocean and Coastal Resource Management from the Department of Commerce; the Department of the Army and its Corps of Engineers (Corps); and the Maritime Administration from the Department of Transportation. The Group's efforts complement other Administration initiatives, such as the White House's Interagency Working Group on Federal Wetlands Policy and the White House's Oakland Harbor Dredging Task Force.

The Group's objectives are to:

- Promote greater certainty and predictability in the dredging and dredged material disposal process by reviewing and identifying ways of improving interagency coordination, information gathering, criteria review, and overall sequencing of approvals; and,

- Facilitate effective long-term management strategies for addressing dredging and disposal needs at both the national and local levels.

Outreach Sessions

The Group is conducting two rounds of outreach sessions in ten important port cities throughout the country, and in Washington, D.C. The outreach meetings serve as a forum for interested parties such as port authorities, environmentalists, recreational boaters, fishing groups, labor unions, businesses, and other public interest groups to provide information and input to the Group. The input obtained from the outreach sessions has helped to shape the Group's focus to date. Furthermore, many of the suggestions received will be incorporated in the final report containing the Group's recommendations for near-term and long-term improvements to the dredging authorization and permit processes.

The First Round of Outreach Sessions Resulted in the Identification of Issues and Potential Solutions to the Problems Associated with the Dredging Process.

The first round of outreach meetings was held in January and February 1994 in Washington, DC; Boston, MA; Hoboken, NJ; Savannah, GA; Chicago, IL; St. Louis, MO; Houston, TX; New Orleans, LA; Portland, OR; and, Oakland and Los Angeles, CA. Over 500 individuals participated in this round of meetings.

The data obtained from these meetings, consisting of both written and oral statements, indicate that port, shipping, and environmental interests agree on certain concerns as shown in Table I.

Table I: Public Concerns About the Dredging Process

- A modern and efficient port system is essential to national and local economies;
- Consistent protocols and standards should be developed for the classification and management of contaminated sediments;
- The dredging permitting process needs to be made more predictable;
- Beneficial uses of clean dredged material should be encouraged through federal funding and decision-making processes;
- Funding mechanisms must be found for alternative disposal strategies and site remediation; and
- Upstream sources of pollution must be brought under control if the contaminated sediments problem is to be solved over the long-term.

However, while there was agreement on these conclusions, there are at least two fundamentally different perspectives on the major problems which undermine the dredging process. These two points of view may be articulated as follows:

The lack of a national port dredging policy.

Suggested Solutions:

- Develop a national port dredging policy;
- Promote active coordination between regulatory agencies during the permit review process by a lead Federal agency;
- Establish standardized, concurrent, and time-limited review of permits; and
- Obtain additional funding to promote beneficial uses of dredged materials and to pursue alternative disposal methods and sites.

Contaminated sediments have potential negative impacts on human health and the environment.

Suggested Solutions:

- Obtain more funding to develop new techniques for contaminated sediment disposal, site remediation, and decontamination technologies;
- Prevent future contamination through effective point and non-point pollution controls;
- Eliminate ocean disposal as an option for dredged materials;
- Establish long-term planning processes at the local level that include all of the affected interests especially at ports with substantial dredging problems; and
- Change the regulatory process to be more open and accessible to meaningful public participation.

In addition to the overall concerns listed above, region-specific problems and potential solutions associated with dredging and dredged material disposal were identified in many parts of the country during the first round of outreach sessions. For example:

- Highly industrialized areas with contaminated sediment problems, such as the Northeastern United States, focussed on the need for both defined standards for sediment testing and disposal and a long-term strategy for locating and managing disposal sites.

- The Great Lakes Region focussed on dredged material disposal issues (the remaining capacity of confined disposal facilities in the region is very limited).

Each region exhibited a different mix of problems. The "local story" presented at these outreach sessions raises an important question to be considered when evaluating possible improvements to the dredging process -- How can greater uniformity and certainty be achieved without sacrificing the flexibility needed to adjust to local problems?

Finally, the outreach sessions identified success stories, such as the local planning and coordination efforts in a number of ports. The meetings indicated that one factor in successful dredging projects (and which varies from region to region and port to port) is a good working relationship between Federal and State agencies and between the agencies and local sponsors. A poor

relationship leads to communication and procedural problems, such as not being aware of or understanding the operational impacts of permit requirements or long delays associated with even routine maintenance permits. The experience on consensus building gained in the success stories will be factored into the deliberations of the Group.

The Second Round of Outreach Sessions Presents Options for Public Comment.

The Group used the information obtained from the first round of outreach meetings to develop 28 options which may be used to address some of the problems identified with port development and the dredging and disposal process. The second round of outreach sessions will focus on these options to elicit comments from interested parties. The public will be asked to address the merits of each option, and will identify other options or issues which may have been overlooked. This input will help the Group develop its final recommendations.

WORKING GROUP THEMES AND ISSUE AREAS

In developing its approach to improving the dredging and disposal process, the Group identified three overarching themes:

- Both short-term and long-term management and planning strategies are needed;
- The role of Federal, State, and local government must be clearly defined and implemented; and
- Adequate and appropriate funding is critical to achieve the goals of the process.

These themes can be found in most of the issue areas associated with the dredging process. In addition, five issue areas have been identified to categorize each option. As shown in Table II, the issue areas raise unique questions to be considered when reviewing the options.

TABLE II: Issue Area Considerations

Issue Area	Special Considerations
1. Federal Interagency and External Coordination	How can Federal, State and local agencies, and non-governmental interests, including the public, improve their overall working relationships regarding the review of dredging proposals (defined as a Federal permit or civil works navigation dredging proposal)?
2. Proactive Local Planning and Coordination	Can effective advanced planning mechanisms be developed to adequately address dredging and dredged material disposal projects and greater State, local, and public participation?
3. Dredged Material Disposal	What mechanisms are needed and how can responsible parties better plan for and more effectively manage dredged material disposal decisions?
4. Dredging Policy	What is an appropriate national policy with respect to dredging? At what level of government should these decisions be made and what mechanisms need to be developed to implement and coordinate these decisions?
5. Funding and Project Development	Should policy and procedural changes be adopted for funding the development, improvement, and maintenance of deep draft navigation channels and harbors, including the disposal of dredged material? What is the national interest in federally funding dredging projects? What criteria should be used for funding port activities?

ISSUE AREA BACKGROUND

This section provides a general background discussion of each of the five issue areas to provide an appropriate context for evaluating each option.

1. Federal Interagency and External Coordination. Federal statutes, implementing regulations, and individual agency policies mandate considerable internal and external coordination on dredging proposals. Coordination among Federal agencies is designed to promote a unified Federal position that facilitates an expeditious final decision on a dredging proposal. Early and continuing liaison among the agencies (both Federal and State) and with involved non-governmental organizations (NGOs) should generally forestall conflicts and result in sound dredging proposals and decisions. An early, coordinated planning approach by all affected interests allows responsible parties to recommend project modifications and avoid problem areas before significant amounts of time, effort, and money are expended. This coordination needs to take place during the entire project development process and not just at the disposal stage in order to be truly effective.

Despite this mandate, and all good intentions, coordination at the Federal level may be inadequate or fail to happen for a variety of reasons. For example:

- Heavy agency workloads and/or internal inconsistencies may interfere with coordination,
- Outside groups may not participate in a complete or timely manner, and
- Even if implemented, coordination procedures may fail to resolve outstanding conflicts or to result in a unified Federal position.

Among the agencies, headquarters offices have varying degrees of control over the operations of the regions. This sometimes leads to differences among the regions regarding priorities, procedures, and decisions on given actions. Such inconsistencies can result in confusion in other agencies, States, ports, and with the public regarding processes, policies, and predictability. In addition, each agency has its own system for coordinating dredging issues between its headquarters and regional offices. Generally, headquarters offices are responsible for setting national program policy and general oversight. The regional or field offices handle local activities such as planning, permitting and monitoring, and work directly with the States.

While many of the issues concerning coordination can be addressed at an administrative level, there are legislative mandates which prescribe the procedures that shape this process. Regulations provide for specific response times from the various concerned parties. However, the lengthy application review times, resulting from the environmental, technical and public perception/opinion issues, may give the impression of sequential review. Although the Corps regulatory process provides for concurrent review by all responsible Federal and State agencies, additional data gathering, as well as additional coordination, may be necessary to resolve significant environmental issues. To expedite the review process, the Corps has entered into memoranda of agreement (MOA) with the Federal resource agencies, such as the CWA §404(q)

MOAs. These provide structured mechanisms for timely elevation and resolution of unresolved permit cases, as well as broader policy issues.

Finally, all coordination efforts must allow for adequate time for the public participation process. There are two contrasting opinions about the current dredging and permitting process. Port, labor, and development interests may view the existing public participation process as excessive, resulting in lengthy and expensive delays in port maintenance and development. On the other hand, environmental concerns, strongly believe that the current process is inadequate -- that it often fails to allow full public involvement or to fully protect the environment. A framework for increased NGO participation sufficient to meet local port needs in a way that will not significantly increase project costs through a lengthy process may require a combination of legislative, regulatory, and administrative improvements. Providing for earlier consultation in decision making and timeframes for improved participation need to be considered.

2. Proactive Local Planning and Coordination. The interagency and external coordination described above must be supplemented by proactive local planning and coordination. Local planning concerns must work together to develop mechanisms for early coordination and advanced planning for dredging activities and dredged material disposal sites. Successful development of these mechanisms, far ahead of the development of any permit application or project-specific proposal, can result in reduced conflict and delay and provide for improvements in consensus building among affected parties for specific dredging projects. Table III provides examples of the role and responsibilities of local entities in the dredging process.

Table III: Levels of Local Involvement

State Regulation	Local Planning and Zoning	Individual Port Planning
• States are authorized under the CWA and the CZMA to require Federal dredging activities to meet State water quality standards and State Coastal Zone Management programs, respectively.	• Local planning and zoning land use measures reflect the priorities of the community. For example, the availability of upland sites for dredged material disposal is affected by local land use policy and planning. Federal policies provide that the primary responsibility for zoning and land use rests with State and local governments.	• Individual port planning concerns include transportation economics, terminal operations, and terminal construction to include dredging navigational channels. While the responsibility for maintaining Federal channels lies with the Corps, individual ports serve as local sponsors for dredging projects.

In addressing adversarial problems associated with the existing approach, avenues for improved planning and consensus building need to be considered. This process should allow sufficient time upfront for dialogue and feedback in an ongoing planning process. In doing so, local planning organizations need to provide linkages between broad regional or national port and dredging policies and highly-specific port or statewide planning and coordination efforts. In addition, the technical information necessary to make decisions must be made available to local

interests. Some efforts have already been undertaken on a Federal level to focus on local planning needs. For example, in a March 1993 policy on dredged material management, the Corps of Engineers set forth the goal that every Federal navigation project or group of Federal navigation projects have an adequate dredged material management plan to meet immediate needs and projected needs for a 20-year period.

Several options are available under existing authorities that can be adapted to establish frameworks for increased planning and coordination at the local level, including enhanced State and local government involvement.

3. Dredged Material Disposal. One of the most critical decisions in any dredging project is determining the disposal method and location for dredged material. Dredged material disposal is primarily regulated by the CWA and the MPRSA. The regulations under these statutes are applied after a long process involving other statutes, regulations, policies, and decisions which determine where to dredge, when to dredge, and how much to dredge. Unfortunately, the actual disposal of dredged material often poses the greatest potential environmental impact; therefore, decisions made about disposal are frequently controversial and difficult.

It is crucial to address disposal issues early in the planning process for dredging projects. Unless early planning and overall project budget considerations take into account such alternatives as beneficial use, by the time of the disposal decisions the preferred alternatives may be foreclosed. To avoid this potential, early decisions as to possible alternatives and funding mechanisms need to be made. While permit-specific consideration of disposal alternatives should be retained to allow for flexibility in the process, long-term planning and development of potential alternatives must be addressed at an early stage to avoid controversies and delay at the disposal stage or failure to implement the project. In short, individual disposal decisions at the end of the process cannot be used as a substitute for advanced planning and development of suitable alternatives.

The Corps is the decision making authority for dredged material disposal for both federal projects and permits. However, this authority is subject to both EPA environmental criteria and EPA review and oversight. Environmental impacts from disposal are controlled through several mechanisms including: site selection, management, dredged material evaluations, and mitigation measures.

Under both the CWA and the MPRSA, sites are selected to minimize physical impacts and resource-use conflicts, and to best match the site management objectives (e.g., needs for monitoring or confinement). Under the CWA, the disposal site designation is typically done as part of the dredging process. Under the MPRSA, selection of an ocean disposal site typically is done separately from a specific dredging and disposal action. In this case, EPA is responsible for designating such ocean disposal sites. This responsibility takes the form of rulemaking, which requires public notice and comment. There is also a provision in MPRSA for case specific disposal selection by the Corps.

Before a permit can be issued for aquatic disposal, the Corps must evaluate the dredged material, using the criteria established by EPA pursuant to the CWA and the MPRSA, to determine if the potential impacts of contaminated sediment disposal is unacceptable. Evaluating the potential environmental effects of contaminated sediments is difficult and complicated. Controversy over dredged material disposal is exacerbated by scientific uncertainties. This is especially true for chronic effects and bioaccumulation, which often lack agreed upon endpoints from which an assessment about the environmental impact can be made.

Where contaminated dredged material disposal occurs in the aquatic environment, management techniques to reduce the exposure of marine organisms to the contaminated material may be necessary. These include such techniques as capping (covering contaminated material with clean material to isolate it from the environment) or using in water confined disposal facilities to prevent contaminant migration.

Ultimately, the source of contamination must be addressed in order to deal with dredged material contamination. Sediments receive pollutants from both point and non-point sources. Effective contaminated dredged material management requires not only effective disposal techniques, but also increased attention to identifying and controlling the sources of the contamination through mechanisms such as the CWA.

Disposal of dredged material contaminated with chemicals can cause unacceptably adverse environmental impacts. Concerns about these adverse impacts can significantly disrupt dredging projects. The major focus of the Group is not to determine what is or is not contaminated, but rather, to investigate how to handle those dredged materials once that determination has been made. (Attachment A lists ongoing efforts by EPA and Corps in this area.)

4. Dredging Policy. The current policy guiding Federal agency decisions on the dredging process is perceived by many as inconsistent and disjointed. Despite this contention, significant amounts of material are dredged annually and the process does help protect the interests of those historically not having a role in the dredging process. The Group recognizes that there has been a call for a national dredging policy that is coherent and consistent.

Current policy originates from the requirements of statutes and regulations administered by separate Federal agencies. Policy is also influenced by State, regional, and local environmental and economic concerns. Each of these interests has different, and at times, competing missions and/or programs. Equally important, the resource base available to these interests to implement dredging policy has become increasingly constrained.

Today, economic issues often drive community development priorities and decisions. The economic livelihood of communities, large and small, is inextricably tied to adequate waterborne transportation. State and local governments support port and harbor economic development needs through land use designations, formation of port authorities, authorization of special financing means, marketing programs, and landside infrastructure to move freight from one mode of transportation to another.

Changes to Funding Mechanisms in the Dredging Process have affected Roles and Responsibilities

> Cost sharing requirements under WRDA resulted in increased non-Federal participation in planning and funding dredging projects. However, some believe that the current decisionmaking process does not include adequate input from local interests outside the port community and that the lack of a coherent national dredging policy allows Federal agency policies to be inconsistently and ambiguously applied to specific port or harbor development projects. Others contend that states and local areas do have influence on decisions relating to port and harbor development through venues such as zoning ordinances, environmental requirements, and the planning process for Federal projects.

The Corps has historically been responsible for funding and performing dredging operations, while State or local governments or private entities are responsible for shoreside port operations. This relationship has been marked by a lengthy project development process. Today, the process is being challenged by increased attention to significant environmental concerns and constrained economic resources. This challenge has forced new roles and funding responsibilities on each of the affected parties and has disrupted the relationship.

When considering changes to dredging policy, the appropriate level of Federal involvement, or the Federal role, must be determined. Suitable mechanisms to implement this role (as well as to address and reconcile the rival interests and concerns of the various interested parties) must also be identified. This determination will be complicated.

Based on the above discussion, the following questions must be answered when considering changes to the national dredging policy: What Federal dredging policy will best guide the emerging economic and environmental issues? Should a Federally-driven process, regional governance system, or market driven decision making system be implemented?

5. Funding and Project Development. The system for funding and project development of deep draft navigation channels and harbors is subject to specific Congressional authorizations. It is also governed by the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G) which were established by Executive Order in March of 1983. The objective of the P&G is to attain national economic development consistent with national environmental laws and regulations. (This is discussed in greater detail below.)

Prior to WRDA in 1986, the Federal government bore the primary responsibility for developing the Federal deep-water navigation system. The project development process at this time could last from 15 to 30 years between initial project studies and the start of construction. WRDA resulted in significant changes to both the financing and development processes. Under WRDA, the local share of navigation improvements increased from zero percent to 35 and 60 percent of total cost. WRDA reforms in the project development process have reduced the length of the process to 6 to 10 years from project initiation to the start of construction.

Currently, Federal assistance is provided through the Civil Works program of the Corps. This program, based on the cost sharing requirements of WRDA, has four major steps:

- The Corps submits a proposal, based on a feasibility study performed by the Corps, to participate in dredging projects, to Congress;

- Congress reviews and authorizes, or denies, the proposal[1];

- After Congressional authorization, the Corps executes a Project Cooperation Agreement (PCA) with the non-Federal sponsor; and

- Subject to appropriations, project construction is begun following execution of the PCA and completion of project design.

Despite these procedural improvements, both port and environmental groups have concerns. The ports are concerned that the development process takes too long, costs too much, and is too uncertain. Environmental interests are concerned that current Federal assistance is inefficient and is financing unnecessary channel widening and deepening that promotes destructive competition between ports and does not contribute to national economic development. These concerns stem from inconsistencies and unresolved issues regarding the role of Federal assistance in dredged material disposal, beneficial use of dredge materials, maintenance dredging, and the Federal decision making criteria for plan selection and funding.

Federal and non-Federal responsibilities for dredged material disposal vary from project to project, region to region, and port to port depending on when the project was authorized. For example:

- The Rivers and Harbor Act (RHA) of 1970 authorize the Corps to construct, operate, and maintain confined disposal facilities in the Great Lakes and their connecting channels, with local interests generally bearing no costs. In contrast, navigation projects authorized since 1986 require the non-Federal sponsor to provide upland and confined disposal facilities.

- As a general rule, open water disposal costs are borne by the Federal government while upland and confined disposal costs are largely non-Federal. This inconsistency creates a strong economic incentive for a non-Federal sponsor to urge use of open water disposal sites (which are "free" to the non-Federal sponsor) instead of upland and nearshore sites which must be paid for by the project sponsor.

Despite the existence of a framework to distribute Federal assistance for beneficial use of dredged material, there is a widespread perception that more dredged material could and should be used beneficially.

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1 Small navigation projects can proceed without specific congressional authorization under Section 107 of the RHA The Federal expenditure on these projects is limited to $4 million.

Another issue involves the responsibility for funding both mitigation of dredging and dredged material disposal operations and beneficial use projects. For example, under the CZMA, the CWA, and State historic preservation program requirements, a State may require that the Corps deposit clean dredged material on beaches. The State views this requirement as a legal financial obligation of the Corps under the requirements of Federal law. In contrast, the authority given to the Corps to participate in beneficial use projects requires cost sharing with a non-Federal sponsor if there are additional costs for the beneficial use.

In addition, the cost sharing requirements of WRDA introduced a market orientation into the navigation project process. New construction projects now have significant cost sharing burdens which force ports to more closely examine their plans. Arguably this has reduced the demand for new dredging projects. Applying cost sharing to maintenance dredging, might cause more locales to re-examine the role of ports in their economic and transportation systems. This approach presupposes a detailed analysis of revenue generation and cost allocation to insure an equitable match on a regional basis. This should lead to a more consensual approach to dredging projects since ports would be required to compete for scarce resources on a local/regional basis.

Existing Mechanisms for Beneficial Use Available to the Corps

- **The Corps can beneficially use dredged material if such use is the least cost disposal alternative consistent with sound engineering practices and Federal environmental regulations. Here the cost would be shared the same way that any other navigation construction or maintenance cost is shared.**
- **Under WRDA, the Corps may place dredged material on beaches even if this is not the least cost disposal alternative. This authority applies to both maintenance and new construction dredging. The incremental cost of the placement must be shared 50-50 with State or political subdivision of a State.**
- **WRDA also allows the Corps to participate in the incremental cost of creating aquatic habitat and wetlands with dredged material, even if this is not the least cost disposal alternative. The Federal share of these projects is 75 percent.**
- **Finally, beneficial use projects may be specifically authorized by Congress as separate projects or as part of the authorization of a navigation improvement.**

It is uncertain whether cost sharing would lead to less maintenance dredging on the whole. It may just reallocate the amount of maintenance dredging between ports. It is expected that maintenance dredging overall would probably be more thoroughly scrutinized from an economic perspective, including related environmental costs. It should be pointed out that the market orientation would less easily apply to maintenance of Federal navigation channels. These costs are primarily Federal and reimbursed from the Harbor Maintenance Trust Fund (HMTF).

The reaction of the port community to such a market orientation approach could be antagonistic because some ports would benefit at the expense of others. Also, navigation shippers and receivers are currently paying for maintenance dredging through the Harbor Maintenance Tax. Retaining the tax while requiring non-Federal cost sharing for maintenance would be viewed as a double payment by non-Federal interests.

Other ambiguities are found in the Federal decision making criteria for plan selection and funding. The P&G mandates a rigorous study process leading to the identification and recommendation of a plan, known as a National Economic Development Plan (NED). The NED must reasonably maximize national economic development benefits consistent with protecting the nation's environment. A similar decision making criteria is established for the selection of the disposal alternative. For disposal activities, the Corps will select the least cost disposal option that is consistent with sound engineering practice and the environmental standards for ocean dumping established by §404 of the CWA and §103 of the MPRSA.

Several Federal agencies feel that the P&G criteria are incompatible with many Federal environmental laws and regulations. For example, the CWA Guidelines governing the discharge of dredge and fill material into the waters of the United States state that the least environmentally damaging practicable alternative is to be selected. The P&G requires the recommendation of the alternative that reasonably maximizes net benefits consistent with protecting the environment. In navigation projects, these conflicts in decision making criteria most often surface with regard to disposal of dredged material. Federal and State environmental agencies believe that the P&G procedures and Corps maintenance regulations do not provide an adequate basis to select and fund the least environmentally damaging practical alternative. The Corps believes that the P&G procedures assure consideration of economic and environmental criteria in selecting disposal alternatives.

Finally, there is a funding issue regarding efficient use of the HMTF. The HMTF is to be used to fund the maintenance of deep draft Federal channels and harbors. The First Annual Report to Congress on the Trust Fund showed a surplus of almost $121 million. (It should be noted that as part of the 1990 budget reconciliation process, $45.5 million of the HMTF is targeted for the National Oceanic and Atmospheric Administration.) This surplus continues to grow. This large surplus could expand the use of the HMTF to meet navigation, long-term planning, dredged material disposal, beneficial uses of dredged material, and remediation of contaminated sediment needs.

RESOLUTION OPTIONS

This section of the document presents resolution options for the dredging process. These options are preliminary and are intended to foster discussion. They do not represent conclusions or recommendations of the Group. In addition, the options should not be considered mutually exclusive. Each option should be evaluated both individually and in conjunction with other options.

Each set of options is preceded by a brief statement about the issue area. They are then listed, along with clarifying information and/or relevant examples. Please note that the options address the Federally initiated "new" navigation projects (i.e., deepening and widening of channels) as well as operations and maintenance dredging and the related permit application process.

The options are organized into the following issue areas:

- Federal Agency and External Coordination,
- Proactive Local Planning and Coordination,
- Dredge Material Disposal,
- Dredging Policy, and
- Funding and Project Development.

1. FEDERAL AGENCY AND EXTERNAL COORDINATION

The number of Federal, State and local agencies and non-governmental interests involved in a typical dredging proposal has grown over the years due to new statutory mandates and increasing public interest. Despite efforts among involved interests, appropriate coordination does not always occur or succeed in resolving differences. Agency workloads, priorities and conflicting mandates or internal approaches or requirements can contribute to this. In many instances the perception is that agencies do not "have their acts together," thus causing delays in decisions on dredging proposals. Government should make efforts to assure effective internal coordination and procedures so that affected interests and the public can focus on the salient issues.

Option 1.1 *Make Better Use of Existing Coordination Mechanisms within the Regulatory Process*

Procedural mechanisms exist which could be used to promote interagency coordination and public involvement. Examples include:

- Conducting pre-application consultation meetings with the affected agencies to facilitate project review;
- Completing provisions of MOAs among Federal agencies to develop local procedures to guide coordination and set time frames; and
- Requiring permit applicants to consult with the public before beginning the application process.

Option 1.2 *Define Characteristics of a Successful Interdisciplinary, Public/Private Task Force on Dredging to Guide the Formation of Such Groups at a Local Level*

Interdisciplinary task forces have been developed on an ad hoc basis at some ports to address contentious issues. These task forces have been proven to increase coordination among the agencies, port users, and NGOs. Established, defined dredging task force characteristics would provide port officials with guidance and/or successful models for task force formation.

Option 1.3 *Create National and Regional Dredging Process Review Teams*

Each of the review teams would be a two-tiered structure with an operating level subteam and a policy level subteam. The teams would review both the overall dredging process and specific projects on a regular basis.

- The operating level subteams would consist of a group of operating managers from responsible agencies. The teams would meet quarterly, or as needed, to discuss and review unresolved issues as well as problems with specific projects. Groups could meet regionally on a more frequent basis and less frequently on national basis.

- The policy level subteam would consist of individuals with decision making authority. The subteam would handle disputes between the agencies or other decisions which require a higher level of authority.

Option 1.4 *Develop an Educational Program to Build Awareness of Existing Mechanisms for Public Involvement*

The public involvement process can be unfamiliar or intimidating to the public. Training could be developed for target groups (e.g., fishermen, conservation organizations, ports interests) to gain expertise to participate in the process.

Option 1.5 *Conduct Internal Reviews of Agency Guidance*

Each agency headquarters could aggressively direct its regional offices to follow consistent and specific national protocols and policy. Each agency would formally review its current policy guidance for dredging activities. These reviews would ensure that guidance was maintained, revised, updated, and/or expanded to cover more areas, minimize inconsistencies, and provide clear direction to regional and field staff. Where feasible, regional staff would be trained in the revised guidance to ensure that staffs are knowledgeable of overall agency policy. This effort would be coupled with more frequent staff level meetings and/or conference calls with all the regions.

2. PROACTIVE LOCAL PLANNING AND COORDINATION

There is a need to assure that local planning mechanisms are in place to adequately plan for dredging and dredged material disposal projects so that projects can be handled in a timely way rather than as a crisis management situation.

Option 2.1 *Enhance Federally-led Efforts to Ensure the Development of Long-Term Management Strategies*

The Corps' dredged material management planning approach, known as Long-Term-Management Strategies (LTMS), provides an existing interagency framework to address dredged material management issues in a broader, more comprehensive planning context, such as area wide dredging plans. The program could be used to coordinate, integrate, and leverage separate agency programs and efforts in dredged material management and assure that these efforts contribute to broader environmental protection and restoration goals.

Option 2.2 *Support State Efforts to Develop Long-Term Port Management Plans*

Existing laws could be used to provide the States with assistance in this area. For example, the CZMA already requires balancing preservation and development, encourages public participation and cooperation, and provides a means for local governments to participate in developing such plans. Examples of how the CZMA could assist States in developing long-term management plans include:

- Using enhancement grants which could consider near-term infrastructure needs for ports as part of a planning effort;

- Providing funding to State and local coastal management entities to institutionalize dredging and dredged material disposal planning as part of State CZMA Plans.

Option 2.3 *Establish Advisory Working Groups for Each Major Port Area to Participate in Dredged Material Management Planning*

Each working group would consist of Federal, State, and local agencies, and affected interest groups. The working groups would participate in dredged material management planning. This committee would serve as a focal point for coordination, resolution of issues and integration, and act to combine separate agency programs and efforts to meet common objectives.

Option 2.4 *Use Watershed Planning Provisions Under 1994 CWA Amendments to Develop Watershed-based Dredging Plans*

Comprehensive watershed management strategies would be developed to specifically address load reduction of sediment and silt which ultimately affect water-dependent uses such as port development and ship operations. States and municipalities, along with the Federal government would cost-share in the planning and develop the watershed management programs. When established, statewide programs would also include early public involvement in watershed plan preparation.

Option 2.5 *Use the Planning Process of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 to Assure Linkages with Plans Which Address Dredging Issues*

ISTEA provides for the development of long-range transportation plans based on substantial public input. Elements of the plans would focus on port issues within a broad-based planning context. Metropolitan planning organizations can be used to review port development plans (i.e. dredging, disposal, and marine terminal development reviews) to maintain consistency with land use and transportation policies and programs.

3. DREDGED MATERIAL DISPOSAL

Creation and maintenance of channels, harbors, and slips require dredging which results in the generation of large volumes of material that must be disposed of or used in a beneficial manner. Controversies over how to dispose of or beneficially use dredged material can adversely affect the nation's ability to maintain harbors and ports. The problems associated with dredged material disposal are compounded if: the material is contaminated with chemicals capable of causing adverse effects; alternative sites for disposal of these materials have not been adequately identified in advance; or, opportunities for beneficial use are not adequately explored for clean material.

Option 3.1 *Enhance Research and Monitoring Activities to Improve Dredged Material Disposal Decision Making*

Examples of specific areas to be encompassed in the research efforts include bioaccumulation interpretation, chronic toxicity, and disposal site exposure assessment.

Option 3.2 *Seek Alternatives to Open-Water Disposal for Contaminated Sediments*

Alternatives to traditional openwater disposal of dredged material will become increasingly important as improved sediment tests may identify more sediment as contaminated.

Option 3.3 *Increase Efforts to Identify and Control Sources of Pollution*

Dredging proponents and regulators should become more involved in identifying and addressing opportunities to control sources that contribute to contamination of sediments. Specific measures to control pollutant sources are outside the scope of this effort and are being addressed in other forums (e.g., CWA Reauthorization).

Option 3.4 *Enhance Research and Demonstration of Decontamination Technologies*

Where contamination is in place and dredging and aquatic disposal must proceed, efforts to treat or reduce potentially contaminated sediment may be appropriate to mitigate potential impacts. Research and demonstration efforts on such technologies should continue or be enhanced in order to make such technologies more practicable and cost effective.

Option 3.5 *Provide for More Effective Education and Communication with the Public on the Risks and Impacts Associated with Disposal of Dredged Material*

Effective communication with the public on the risks and impacts of dredged material disposal is important to enable meaningful public participation in the regulatory process. Increased public education and outreach activities on such issues would help foster such involvement.

4. DREDGING POLICY

Current policy to guide Federal agency decisions on where, when, and how to dredge is inconsistent and ambiguous. This is due to the number of Federal agencies, laws, and regulations influencing the dredging and dredged material disposal process. The policy is also affected by State and regional environmental and economic concerns not always reflected in the Federal agenda. There has been a public call for a standardized national dredging policy. The crucial element in considering changes to dredging policy is to determine what level of government involvement is appropriate and what mechanisms are best suited to implement this role and address and reconcile the often competing interests and concerns of the various interested parties.

Option 4.1 *Develop Principles to Guide the Federal Decision Making Process*

A set of principles gleaned from existing policies would provide framework guidance for Federal agency approaches to dredging issues. The authorization and permitting process would remain essentially the same.

Option 4.2 *Support a Federally-driven Decision Making Process Which Determines Priority Ports According to Defense, Commerce, and Environmental Criteria*

This would support the national interest by having the Federal government allocate limited budgetary dollars to the more important ports. This assumption supposes that the market and the existing political process do not adequately allocate resources in this area and that the Federal government must intervene to assure a rational port development policy particularly in view of the limited economic resources. Under this option, the Federal government would specify which ports best meet national needs based upon the stated criteria. States and regions could still invest in port facilities not deemed essential but they would not receive priority in Federal funding assistance.

Option 4.3 *Integrate Federal/State/Local Interests Under a Regional Governance System with Decision Making Authority*

The Federal government would fund regional structures authorized to plan for and manage dredging projects within that area. The organization might be similar to the Metropolitan Planning Organization which coordinates transportation planning on a regional basis or a variation under a future National Transportation System. This option might be further developed to provide the regional institution with fundraising capability.

Option 4.4 *Support a Federal Program with Locally-driven Decision Making Mechanisms*

This would be implemented through such methods as multi-year appropriations, a dedicated trust fund, and grants to local sponsors. It addresses possible inefficiencies inherent in the annual Congressional appropriations process and couples Congressional oversight with more certainty for advanced planning.

Option 4.5 *Allow Market Driven Decision Making for Ports to Determine Needs for Dredging*

Under this option, the ports with greater resources for their cost share of a project would have priority access to Federal funds. The cost sharing arrangement introduced by WRDA would be expanded so that more of the costs of port development and maintenance are included.

5. FUNDING AND PROJECT DEVELOPMENT

Federal assistance for dredging and dredged material disposal projects is distributed in an unclear manner. Various Federal and State agencies and certain statutes, mandate specific funding mechanisms. Some of these mechanisms may conflict with one another. The Federal assistance distribution process should be clarified.

Option 5.1 ***Transfer the lead responsibility for project implementation from the Federal government to non-Federal sponsors and establish a dedicated source of funding for navigation projects which distributes Federal funds to navigation project sponsors as grants***

This option would shift much of the project planning, design, and construction responsibility from the Corps to the individual ports. Project planning and development grants, with continuing requirements for local cost sharing, would be allocated to the ports based on criteria established by the legislation establishing the new program and refined by the granting agency. These criteria could include a national ports plan for navigation projects outlining the framework for Federal assistance. A variation of this option would provide that funding from a dedicated funding source be distributed as grants to the ports by a regional governmental organization.

Option 5.2 *Authorize the Corps to Approve and Fund Projects with Only Programmatic Congressional Approval and Appropriations*

This option would allow funds for the planning, design, and construction of navigation improvements to be appropriated on a programmatic, rather than a project-specific, basis. This could expedite the funding process.

Option 5.3 *Establish Non-Federal, Local Sponsor Cost Sharing Requirements for Maintenance Dredging*

This option would establish non-Federal cost sharing requirements for maintenance dredging similar to the cost sharing requirements that were established by WRDA for new navigation project dredging.

Option 5.4 ***Revise the Federal Principles and Guidelines for Decision Making to Reflect the Dual Objectives of National Economic Development and Environmental Quality***

Under this option, a Federal interagency group could be established to revise the Principles and Guidelines (P&G) to revise Federal decision making criteria. One possibility would be a return to the dual objectives of national economic development and environmental quality that existed before the P&G. A revised P&G could be established through an Executive Order or legislative action.

Option 5.5 *Establish a Decision Making Framework for Determining Which Projects to Fund and How to Dispose of Dredged Material*

Under this option a decision making framework acceptable to all Federal agencies would be established to reconcile the perceived conflicts in criteria. The Principles and Guidelines might be reinterpreted, but would not be revised as in option 5.4.

Option 5.6 *Establish Consistent Cost Sharing Requirements for all Disposal Options Including Open Water, Upland, and Confined Disposal*

Legislative action to support this option could include:

- Legislation to provide consistent cost sharing formulas for Corps participation in the design and construction of upland and confined disposal facilities for both new construction and operation and maintenance at existing projects,

- Legislation to provide a uniform fee for open water disposal.

Option 5.7 *Direct an Interagency Working Group to Look at What the Appropriate Cost-Sharing Should Be when Federally-Approved State Requirements are Imposed and Whether Legislative Changes are Needed*

Currently WRDA provides for cost sharing between the federal government and non-Federal sponsors, however the CZMA requires Federal consistency with State CZM programs therefore States often consider beneficial use to be a Federal responsibility in these cases.

Option 5.8 *Use the Harbor Maintenance Trust Fund to Support Activities such as Regional Management Studies, Beneficial Uses of Dredged Materials, Confined Disposal Facilities, and Remediation and Disposal Technologies*

The Harbor Maintenance Trust Fund could be used to increase the Federal share, or level of Federal funding, for some of the following activities:

- Construction of confined disposal facilities,
- Beneficial use of dredged material,
- Regional dredged material management studies,
- Remediation of contaminated sediments, and
- Research of alternative disposal technologies.

The Group acknowledges that it is not possible to fund all these activities from the Trust Fund; therefore, under this option, decisions would need to be made on which activities are appropriate for Trust Fund financing.

CONCLUSION

Over the next few months the Group will continue to flesh out the details and specifics of possible options, and to incorporate the input from the second round of outreach sessions. The Group's efforts will culminate this summer in a report to Secretary Peña and other department heads outlining the Group's recommendations on improvements to the dredging authorization and permit process followed by an implementation phase.

Agencies with responsibilities in the dredging process are facing budget cuts. Dealing with dredging may, at a minimum, entail a reallocation of existing resources, or even the allocation of new resources.

Depending upon the recommendations, the implementation phase could take a variety of forms. It is anticipated that there will be several levels of recommendations. These may include both actions which could be completed in the near-term such as the preparation of handbooks or memoranda of understanding, as well as long-term actions such as institutional changes requiring statutory or regulatory amendments.

Attachment A

Ongoing Efforts of EPA and the Corps

- The EPA and Corps are developing decision-making guidance for dioxin-contaminated dredged material. The guidance will use the best available analytical techniques and interpretive guidance to address:
  - how to evaluate ecological and human-health effects of multiple-congener contamination;
  - how to identify appropriate detection limits for sediment, water and tissue;
  - how to conduct site-specific exposure assessments;
  - how to manage disposal (including monitoring) to minimize environmental impacts within the limits of applicable regulations; and,
  - how to communicate testing requirements and results to fully inform the public and avoid unnecessary permitting delays.
  - A draft of this guidance is expected to be available for public review in late Spring of 1994.
- EPA is developing Sediment Quality Criteria (SQC) based on the Equilibrium Partitioning Approach (Eq-P)
  - SQC for endrin, dieldrin, acenapthene, fluoranthene, and phenanthrene were published in the Federal Register for public review on January 18, 1994.
  - The Agency expects to issue approximately three additional SQC per year.
  - Uses of the SQC have not been finalized, but they are expected to be useful in evaluating dredged material and setting NPDES permit limits.
- Monitoring of dredged material disposal sites is done to verify predictions made at permit review and issuance.
  - EPA and the Corps share responsibility: the lead for monitoring at any particular site is taken by either agency depending on availability of resource, in-house expertise, and other factors.
  - Monitoring results are critically important to building confidence in the agencies' decision making, and, consequently, to improving agency responsiveness on subsequent disposal proposals.
  - EPA is developing detailed technical guidance on ocean disposal site management and monitoring which is expected to be released in draft by the winter of 1994.
  - Unfortunately, both human and financial resources are inadequate to conduct the monitoring, research, training or guidance development that necessary to accomplish these goals.
- EPA and the Corps are developing joint technical guidance on management techniques for confined aquatic disposal of dredged material.
  - The NAS also is working on a broader study of potential disposal and treatment alternatives
- The EPA will shortly publish a strategy for managing contaminated sediments.
  - This strategy is intended to enhance coordination and consistency among Agency programs (e.g., assessment, prevention, remediation and dredged material management) when dealing with contaminated sediment.
  - Activities the Agency will conduct as part of strategy implementation include conducting a survey of contaminated sediment sites and developing consistent sediment assessment techniques.
  - The strategy is expected to be published in the Federal Register for public review and comment in the Summer of 1994.
- The EPA, in coordination with the Corps, continues to conduct research and development activities in assessing the effects of contaminated sediment, developing chronic bioassay and interpretive guidance for bioaccumulation testing.
- The EPA and Corps are working to develop technologies to remediate contaminated sediment under the Clean Water, Superfund, and Water Resources Development Acts.
- The EPA is revising the Ocean Dumping Regulations to remove or clarify ambiguities that exist in the current regulations. This will not only clarify what tests and procedures are required, but ensure that the most scientifically valid and appropriate tests are used. Proposal is anticipated in Fall/Winter of 1994.

Statement of
Stanley Brezenoff
Executive Director
The Port Authority of New York and New Jersey

before

The Subcommittee on Oceanography, Gulf of Mexico,
and the Outer Continental Shelf
The Committee on Merchant Marine and Fisheries
U.S. House of Representatives
June 14, 1994

on

Port Dredging and Federal Policy

Mr. Chairman and Members of the Subcommittee, I am grateful to have been invited to offer my thoughts regarding federal policy and the dredging of our ports and channels. The Port of New York/New Jersey faces significant problems involving the federal regulatory process, poor sediment quality, and the need for immediate and long-term disposal strategies. We look to the Congress for assistance because we find federal law and regulation lacking and, as such, contributing to a crisis situation that could result in the dislocation of port business and the loss of cargo to the competition, especially ports in Canada. It is our hope that the attention you and others in government are now giving the problem will result in regulatory and legislative improvements that will constitute a new federal policy designed to facilitate port dredging in the U.S. Such a policy must address the duration of the permit process, the validity of testing procedures, conflicting standards, sources of contamination, and a federal role in affording environmentally suitable sediment management strategies.

Fifteen months ago, Lillian Liburdi, Director of the Port Authority's Port Department, appeared before this subcommittee while we were still in the throes of seeking a federal ocean disposal permit so we might dredge the berths at our largest and busiest maritime terminal complex at Port Newark/Elizabeth. And waiting for that to be resolved were roughly three dozen more pending permit applications for other facilities in the bistate port. It was a very frustrating time for us. We were three years into the permit process and it would be several months before the Corps of Engineers formally issued the permit. The frustration we were experiencing is evident in the testimony which I have appended to this statement and commend for your review for its clear statement of the problems and issues that persist even now.

Today, we can point to eight permits that have been issued to various applicants in the harbor, but three times that are still in limbo, some of them mired in the process for well over three years and counting. One applicant was denied a permit and the facility is being closed for

reasons that include the inability to dredge. Attached also is a status on the pending permit applications with notations as to the remaining issues.

In addition to the problems faced by the Port Authority facilities and our tenants, many others on the waterfront are effected. The consequences of delay and the absolute necessity of dredging cannot be overstated. They range from the inability of Con Edison, a major utility company, to move fuel into a riverside generating plant that supplies energy to thousands of New Yorkers, to the inability of the United States Army at the Military Ocean Terminal (MOTBY) in Bayonne, New Jersey, to continue to accommodate deep draft vessels. During the Somalia operation and Desert Storm, MOTBY, which employs more than 2500 people, served as one of the key points of debarkation for equipment and supplies. If they can't dredge, the ships will have to go elsewhere and the future of the base is in jeopardy.

In the time since that March 30, 1993, hearing some progress has been made. And while we are still troubled by our prospects, especially over the near term, I should acknowledge forward steps taken:

1) The Corps of Engineers finally issued its permit for Port Newark/ Elizabeth on May 26, 1993. However, it was followed soon thereafter by a law suit by environmental and fishing organizations against the federal government. The litigation is still pending. Thankfully the suit did not delay the dredging at our facility's berths; the work began a week after the permit was issued. All told, the dredging for which it took over three years to get a permit was accomplished in 35 days. Unprecedented permit requirements including special dredging and material management techniques and an excessively protective capping requirement complicated the project. What would have been a $1 million berth maintenance project cost nearly $17 million, consisting of $1 million for permit work, $3.7 million for dredging and $12.1 million for the meter thick sand cap. Based on that experience we anticipate that future dredging in our port will be significantly more costly than ever before. A chronology of the Port Newark/ Elizabeth dredging permit process is attached for the record.

2) Soon after the permit was issued Federal and state agencies, environmental groups, the port community and my agency came together to focus on future solutions. Now operating under the Harbor Estuary Program, seven task forces are considering issues such as the potential for sediment remediation and the use of subaqueous borrow pits that are created by sand mining. Out of the latter group has come a suggestion for the development of new borrow pits in Newark Bay, beginning with a borrow pit constructed as a pilot project. It is not a perfect process but it does demonstrate the importance of multilateral discussions.

3) The Corps of Engineers and EPA issued an "Action Plan" intended to facilitate the processing of over 30 pending dredging permits in the Port of New York/New Jersey. As noted earlier, the outstanding permits have been our most immediate problem. The action plan represents a level of coordination and focus on the problems in the port that were lacking in previous years. And while we believe the agencies could

have gone further in resolving certain issues they, at the regional and headquarters levels, are to be commended. Frankly, a corresponding focus by Mr. Menendez and others of our congressional delegation provided encouragement to the agencies and for that we are also grateful. The action plan covers issues of relevance to this subcommittee and a few are worth noting here.

o As a consequence of the law suit filed on the issuance of our permit, the EPA and Corps of Engineers were told by the court that they did not have the discretion to not require ocean dumping permit applicants to perform suspended particulate phase bioaccumulation testing outlined in the Code of Federal Regulations even though the agencies find the particular test to be unnecessary for dredged material purposes. On May 20, EPA published interim final rule and proposed rule changes to the CFR to resolve the issue that had national implications. I also understand that EPA has been working on broader revisions to the ocean dumping regulations.

o Acute toxicity testing problems associated with the use of an amphipod as required in the 1991 Green Book prompted great concerns in the port community as to the validity of the test animal. In response, the EPA has reviewed the lab's methodology, provided additional guidance, agreed with the Corps of Engineers to allow greater flexibility in the choice of amphipods, and has undertaken round-robin testing to assure validity for our region.

o A good number of pending permits are over three years in the process and there was and still is a great potential for the agencies to declare the test data to be invalid because of what they consider to be the appropriate shelf life of test data. It is our view that in the absence of any known spills and changes to the sediments applications should not have to retest and that any testing requirements adopted since application was first made should not be required. The EPA and the Corps of Engineers have said they will issue guidance on this issue to the effect that they will re-evaluate test data and make judgments on a case by case basis.

o The action plan affirmed a short-term disposal strategy for material that cannot go to the ocean: subaqueous borrow pits and filling existing mooring berths.

While EPA's change in the CFR has freed eight of those permits, the remaining are subject to additional testing requirements. We are concerned that some of the sediments will not pass. I will return to that concern momentarily.

4) Informal discussions have taken place between labor and maritime representatives and public officials, including Mr. Pallone, Mr. Menendez and other members of our congressional delegation. The discussions have been especially useful in bringing greater clarity and attention to the highly technical issues with which we are confronted.

5) Significantly, the Clinton administration has recognized dredging as a national problem. Its concern has been most visible in the

convening of the Interagency Working Group on the Dredging Process by DOT Secretary Federico Pena. The working group, with participants from all relevant federal agencies, is focusing not only on the ocean disposal permit process, but, importantly, on how federal policy might be improved. Recommendations by the group are expected in the next month and could be very helpful in pointing the way to reform. Indeed we hope that the efforts of the Interagency Working Group, combined with the attention that this and other committees are giving these issues will result in genuine improvements to federal policy.

6) The nation's ports have developed specific recommendations for a National Dredging Policy. Developed under the aegis of the American Association of Port Authorities it includes specific recommendations to improve present law and I urge that this subcommittee consider its many elements. It is a very constructive approach that is intended to improve the policy of the federal role while not diminishing environmental protection. A summary of the proposal is attached for the record.

The above steps notwithstanding, much more needs to be done if the port has a future. The challenge we face in the Port of New York/New Jersey is not only the immediate one of obtaining federal permits for the Military Ocean Terminal in Bayonne, the Earle Naval Station, the Howland Hook Marine Terminal on Staten Island and over twenty more. Working with the federal government and other interested parties we need to develop and implement dredged material management strategies to enable dredging to go on tomorrow and twenty-five years from now.

The federal permit process is an obvious starting point. It should not take over three years for a permit to be issued, as was our experience. Traces of dioxin in the sediments was a complication to be sure, but the shortcomings of the permit process itself make federal agency indecision possible. As Congress prepares to act on the Clean Water Act and the Water Resources Development Act I recommend consideration of two similar suggestions for improvements to the process. One is contained in H.R. 2173, legislation introduced by Mr. Menendez and Mr. Franks to alter the Ocean Dumping Act permit procedures by, among other things, providing a more rigorous time frame for agency review and decision making and requiring concurrent reviews by the agencies.

A more comprehensive approach is contained in the AAPA's proposal for a national dredging policy. It suggests the combining of the Ocean Dumping Act with dredged material disposal provisions in the Clean Water Act to bring consistency to those programs and to establish review and decision time frames. It is painfully evident from our experience that the permit process lends itself to indecision and delay more than it does to decision-making.

One problem that has been very apparent in our region is that the capacity to adequately respond to the finding of contamination in sediments has not kept pace with advances in detecting trace amounts of contamination. And if science can find extremely low levels of contamination does it necessarily mean those pollutants pose a threat to the environment? We have seen the headlines, with the encouragement of opposition groups, transform sediments that meet ocean dumping

standards into "toxic sludge." It is incumbent upon government to clearly communicate true risk to the public.

Another problem is the standards used in judging what is acceptable. Ocean disposal standards are the toughest to meet, more so than those applied to coastal waters. On land at a Superfund site, such as the one on the Passaic River upstream from Newark Bay, the cleanup standard for dioxin is one part per billion. But in the ocean, you cannot place sediments that exceed a ten parts per trillion standard. Does that mean a Superfund site could contribute to a sediment contamination problem long after it has been made "clean?" Is there rhyme and reason?

As I suggested earlier, we expect that some sediments will fail to meet ocean dumping standards. How much? We do not know. It is a consequence of historic pollution--from point and non-point sources--and, no doubt, from present day pollution of the sort this committee is hoping to address in the Clean Water Act amendments. But while the pollution in our region is old news, what is new about this is the testing. Tests are now being required for dioxin and a long list of compounds. Also, the relatively new Green Book prescribes tests far more demanding than the previous version. And the result is that some sediments, including those at marine terminals, that once met ocean disposal standards will no longer do so. Where can we put those sediments? Nowhere at the moment, but as noted earlier we hope to have a borrow pit strategy implemented as soon as possible.

Sediment remediation is an area that requires much more exploration before we can conclude to what extent it can play a role in our long-term dredged material strategy. Environmental organizations in particular believe that decontamination technologies will be a major tool in managing sediments. Perhaps they are right--and I certainly see a need for its use--but it must be shown to be both effective and affordable. Congress authorized a demonstration project in our port but thus far the Environmental Protection Agency and Corps of Engineers have been less than expeditious. We have undertaken to sponsor remediation symposia at area universities to educate ourselves and others regarding the potential for decontamination as a management tool.

Another major flaw in the present policy is with regard to dredged material management. With an extensive system of federal channels and anchorages around the country it is not surprising that most dredging in the U.S. is accomplished by the Corps of Engineers on behalf of the federal government. Given that role and the clear national interest in keeping ports open to international commerce, it is difficult to understand why the federal government does not take more responsibility for dredged material management. Add to that the likelihood that sediments in old, urban industrial ports such as mine, under the new testing requirements established by the Corps of Engineers and the Environmental Protection Agency, may fail to meet ocean disposal standards more so than before. That will mean there be a greater demand for costly alternatives to open water disposal, including sediment remediation and containment facilities.

Since the 1986 Water Resources Development Act the executive branch has been quick to state that disposal facility costs are the responsibility of the non-Federal entity. This short-sighted view may save on federal outlays, but it discourages the development of more environmentally suitable approaches to the management of contaminated dredged materials. Much as there is a partnership between the federal and non-Federal port agency on channel improvement projects there should be a partnership in developing and funding long-term dredged material management facilities that provide for the needs and the natural resources of the port. The law should be altered to enable federal funding of containment facilities whether upland or in coastal and ocean waters.

I should note that the Corps of Engineers today is taking a less distant approach to this issue. In testimony before the Senate Environment and Public Works Committee, Dr. John Zirschky said "[o]ne of the most significant challenges the Corps faces in maintaining and improving Federal navigation projects is the placement of dredged material, especially material which fails...criteria for uncontained, open water disposal." Later in his statement, Dr. Zirschky quite correctly noted that the dredged material management problem "cannot be addressed in a vacuum...[c]ooperative efforts by all involved Federal agencies, the States, port authorities and local governments will be needed." I strongly agree and would add to that group environmental organizations.

I should also note that we have met with Dr. Zirschky and Secretary Togo West of the Department of the Army and we have found their active interest in addressing these problems facing the ports very refreshing. I hope that with the encouragement of Congress and through the efforts of the administration the federal government will become a full partner with the ports in resolving the dredged material management challenge.

We anticipate that the Port of New York/New Jersey--with six million cubic yards of sediments dredged annually--will require use of an ocean disposal site over the long term. But there is a difference between what we have today and what we envision for the future. Today, the only location for the placement of dredged materials from our port is the EPA-designated ocean site--not-so-poetically named the Mud Dump. It is expected to reach capacity in a few years. To date the Federal agencies have made little progress in identifying a new ocean disposal site despite the lack of sufficient alternatives over the near term. In order to avert yet another crisis situation for our port, the Environmental Protection Agency will have to designate a new location for materials that meet ocean disposal standards before the Mud Dump designation expires.

As a rule, if sediments do not meet ocean disposal standards they are not dredged. However, we are working with the federal government and other interests to move as quickly as possible to identify and implement a number of alternatives. Some such as subaqueous borrow pits might be put to use as soon as a year from now. Others, including containment facilities and sediment remediation, could take much longer before they are available. Under most any scenario we anticipate that

the ocean will be needed for some portion of port sediments well into the 21st century. But it is also our intent that dredged material management practices in the future will include isolating contaminated sediments, remediating some portion that is suited for such a solution, and making beneficial use of dredged materials as much as is practical. And if point and non-point sources of pollution are brought under control, and existing hot spots of contamination are remedied, dredging will become much less problematic and the kind of routine infrastructure improvement that it deserves to be.

Thank you for giving me this time.

TESTIMONY
BEFORE
THE SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO,
AND THE OUTER CONTINENTAL SHELF

LILLIAN C. LIBURDI
DIRECTOR, PORT DEPARTMENT
THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

WASHINGTON, DC
MARCH 30, 1993

My name is Lillian Liburdi. I am the Director of the Port Department of the Port Authority of New York and New Jersey. Mr. Chairman, I appreciate the opportunity to testify before this distinguished committee on dredging and ocean disposal of dredged material. I appreciate even more that you are giving your attention to this generic and very frustrating matter of dredging our ports. My statement will address the length of time it takes for decision making within the regulatory process, discuss the high cost of testing and demonstrate the need for a proactive federal policy initiative on dredging and disposal necessary to solve what I see as a national dredging crisis.

First, I would like to set forth a few important points.

- We are not talking about toxic or hazardous materials, for such materials are not dredged and disposed of in the ocean. We are talking about sediments that have low levels of contaminants that are pervasive throughout many if not all coastal systems and not just the New York/New Jersey harbor.

- We are not appearing before you as the offending industrial polluter but as the agency contending with the consequences of the polluter's actions. It is our responsibility as a public port agency to both maintain marine terminal facilities for commerce and to do so with the utmost respect for the environment.

- Not withstanding the fact that the Port Authority is a public agency and my colleagues and I are public employees we cannot adopt an indifferent attitude regarding the real costs and consequences of government regulation. Indeed we must operate as a business does with a practical concern for costs in time, people and financial resources.

- Our port employs 180,000 people. Most of the port's shipping activities occur at the Port Newark/Elizabeth complex, one of the largest in the world. While I

cannot point to actual job losses yet, we have clearly seen signs that our fears are being realized. Due to doubts about adequate depths, some shipping lines have shifted cargo to competing ports including Halifax, Canada. At the same time unnecessary controversy over the existence of trace levels of dioxin in our sediments and the disposal of these sediments with capping at the Mud Dump has harmed the commercial and recreational fishing industries in our region and has the potential to harm our spring/summer tourism business as well.

Why? Because the community at large has been prodded by interest groups who want nothing, even clean material dumped into the ocean. The question has become "how clean is clean?" The federal regulatory system when dealing with sediments proposed for ocean disposal uses criteria and standards which are order of magnitudes more stringent that land-based level criteria. These interest groups insist scientific knowledge is not adequate to justify ocean disposal. The committee should know that with regard to dioxin (2,3,7,8 tetrachorodibenzo-p-dioxin) the land-based criteria viewed as clean is one part per billion, while we are required by the Corps/EPA for a maintenance dredging permit to test to one part in a trillion. That is one thousand parts less.

We need to recognize that with rapid advances in technology our ability to detect things to lower and lower levels far exceeds our understanding of what it all means. It is unreasonable for society to expect to have a complete understanding of all risks of every action taken. If we do not establish reasonable risk levels for environmental protection, economic development will come to a screeching halt. I feel strongly that the risk of not acting is far worse than most proposed activities, such as removing these trace levels by dredging the berths in Port Newark/Elizabeth and subsequently disposing of them in the ocean.

The Port Authority retained a world renowned expert and commissioned a risk assessment of ocean placement of dredged material containing dioxin. The findings concluded that the material we propose to dredge doesn't need to be capped. The risk associated with the dioxin is well below EPA current cancer risk guidelines. However, a special condition of the Port Authority's suspended permit requires a two to one cap by volume, roughly three feet thick. This cap in effect is the suspenders going along with the belt. It will cost approximately $3 million and will exceed the cost of dredging.

Now I'd like to turn to the actual permit process. In the recent past the process of seeking and receiving a dredging and ocean disposal permit for berth maintenance dredging took approximately six months--about three months for sampling and testing of the sediments and marine organisms, about three weeks for Corps/EPA review and publication of a public notice on the permit, one month for public comment and another month for findings and a decision. As a matter of public policy, if the material to be dredged

doesn't meet federal criteria the application would never reach the public notice stage of the process. Our request filed three years ago on April 11 (1990) did. Yet it still isn't resolved even though we are moving slowly toward a regulatory conclusion perhaps this coming month.

There are process issues and executive leadership issues which arise in our story.

On the process side the issues are clearly: responsibility, time, costs, and process management between the responsible federal agencies.

Process Time

The regulatory process is a due process approach. A permit applicant should be able to have rules, requirements and standards explained, provide information based on those requirements for federal agency decision making, expect prompt attention within a reasonable time period and receive a judgment based on scientific and operations factors within a specific and reasonable time frame. That expectation is what the Congress conveyed in its approval of the procedures to be used.

That has not happened in this case. Instead, because trace levels of a substance the federal agencies did not have standards for were found, we became a national process and scientific test lab and a national cause for the environmental advocates. I've attached a chronology of the three-year process we've been through for the committee's review.

Costs

Because of new requirements we were asked to perform four bioassay/bioaccumulation test sets when in the past we had been required to do just one. The Corps and EPA required the facility to be split into four reaches. This quadrupled the costs of testing. We estimate that once this process is concluded we will have spent approximately $1.5 million on this on permit application. However, this is only one component of cost. Added to it must be rising payments to outside contractors (sample collection and analysis), the cost of monitoring of the dredging site, our expenditure for the risk assessment, and Port Authority staff time. The $1.5 million exceeds the $1.0 million cost for the normal annual maintenance dredging of the facility. We estimate the cost associated with this permit is more than 50 percent of the actual construction cost for the full three-year permit. I have attached a table of the Port Authority's expected costs for a one-year dredging cycle should the permit which was issued and then suspended in January be reinstated.

Mr. Chairman, some people believe that as a large agency the Port Authority can easily afford whatever it may cost to obtain the permit and accomplish the dredging. Although this is not true, we

do have more resources than most small public and private terminal operators in the port. Indeed, the tragedy of this is that applicants with small maintenance dredging projects for facilities that need to be dredged once in a three-year permit cycle find that the cost associated with the permit process exceeds the cost of construction. The cost of sampling and testing including consultant fees is hundreds of thousands of dollars, while the actual construction price to dredge 20,000 cubic yards of material may be a little more than $100,000. There are forty other maintenance dredging projects pending in the harbor, many are for small companies that cannot afford a costly and drawn out process, and are unfortunately still waiting for their permits to be acted upon.

Executive Branch Leadership Problems

As a responsible public agency sensitive to environmental, as well as commercial issues, we would have gladly considered another option other than disposal at the Mud Dump if there were any available to us. THERE ARE NONE. Certainly not because we haven't tried to stimulate alternative development and certainly not because the Congress hasn't asked. You have in various legislative directives.

The failure has been in the Executive Branch. The Congress in various legislative enactments has described certain steps to be taken.

1986 Water Resources Development Act -- The EPA Administrator was to study and monitor the extent and adverse effects of dioxin in the Passaic River Newark Bay system and report to Congress one year later. To the best of our knowledge this has not been done.

1988 Water Resources Development Act -- Within 180 days of enactment the EPA Administrator was directed to submit a plan to Congress to designate one or more sites as an alternative to the Mud Dump. To the best of our knowledge this has not occurred.

1990 Water Resources Development Act -- Within 180 days of the legislation the EPA Administrator was required to submit to Congress a long-term management plan for dredged material for our port. While a draft has been prepared to the best of our knowledge it has not been submitted.

1992 Water Resources Development Act -- Authorized the demonstration of decontamination technologies. The last administration did not implement this requirement. The current EPA administrator has indicated she is moving on the plan to initiate a demonstration program. Tomorrow we will be testifying before both houses of Congress to seek FY 94 funding for this project.

The Port Authority has not sat idly by. We have participated in the federal long-term management strategy program that lasted about twelve years and which discussed a range of disposal options. The report was issued in December, 1989, and to date the major federal follow-up has been the draft EIS on the borrow-pit option.

- o We funded the Institute of Marine and Coastal Sciences at Rutgers University to assess remediation technology through the conduct of two seminars involving world renowned scientists and engineers to help us identify those approaches which should be tested through the WRDA demonstration program.

- o We funded a program co-chaired by Rutgers and the State University of New York to discuss strategies to deal with non-point source pollution.

- o We retained EA Engineering to perform the only known risk assessment of the effects of ocean disposal of sediments having trace levels of dioxin--which has been prepared.

- o We have indicated our intent to undertake studies this year which will update both the upland and containment island siting studies of the early- to mid-1980s.

- o We have pledged Port Authority support to the regional programs on informations sharing, seafood promotion and research. We agreed to contribute to and participate actively in the alternative development demonstration program.

Despite our past and planned efforts Mr. Chairman, immediately after issuing the permit on January 6, 1993, the Corps suspended it on January 14, 1993. After nearly three years of deliberation and having written letters of concurrence with criteria and permit conditions, the EPA in a matter of days reversed its position and withdrew its concurrence with the permit. This action forced the Corps to suspend the permit. In addition the National Marine Fisheries Service (NMFS), subsequent to the permit suspension, decided to raise Endangered Species Act issues. Where was NMFS during the three-year federal permit review process?

The Corps, EPA, NMFS and the Fish and Wildlife Service rely on a set of complex memorandums of agreement to address their concerns. They find it convenient to address the issues one at a time. This linear process is drawn out. There is a need for parallel action to expedite the process. Decisions have to be made promptly now. What is required is a policy guidance, a clear mandate that the law and regulations are to be implemented in an impartial manner, and fast rule making.

Finally, I will state unequivocally that the Port Authority has answered all questions posed to us regarding the federal

maintenance dredging application. The material after the most recent dioxin sediment concentration tests was found to be cleaner than the original testing. Therefore there is no basis for the Corps and EPA not to reinstate the maintenance dredging permit with ocean disposal for Port Newark/Elizabeth Marine Terminal Reaches B, C and D.

The seriousness of this issue cannot be overstated. The region is hurting. The 180,000 port jobs as well as regional fishing and tourism-related jobs are at stake. The economic costs are mounting and environmental costs of ocean disposal of dredged material is negligible. We must recognize that the environmental costs of not dredging decreases safety and may lead to spills. In addition, the sediment is in the waterway and is churned up by tidal action and ship passage. It is absurd not to dredge and ocean dispose of the material. It is also supremely ironic that those who express the greatest concern on environmental grounds do not favor capping at the ocean site which is the most expeditious and secure means available for handling contaminated sediments. Meanwhile, the Port of New York and New Jersey is losing cargo. Port interests have pursued a dredging permit fully mindful of and sensitive to the need to ensure that any dredging activity undertaken incorporates the soundest environmental practices.

A clear federal policy is needed now to enable dredging and material management to be conducted without sacrificing the safeguards that are intended by our nation's environmental laws. Part and parcel to that is need for a major adjustment to the federal regulations and the manner in which they are implemented. No longer can we afford to have agencies of the singular federal government act as if they are distinct feudal estates whose primary goal is to protect one's ground against intruders and not work in concert with each other. Time limits must be set and observed, the rules and standards must not be changed midstream, and regulators should be sensitive to the consequences of inaction and indecision.

Perhaps as important, the federal government must acknowledge that its role in tese matters is not simply as a regulator but as a major stakeholder. It is responsible for the dredging of the federal channels which constitute most of the volume of material dredged in our port and others. It is responsible for the US economy that depends on ships carrying cargo to and from the rest of the world. It is responsible for a coastal environment that depends on creative and protective management of its natural resources.

Ultimately, this is not a story of a terminal operator that cannot dredge some berths. It is a question of whether the infrastructure of our and other American ports will be maintained for commerce. And ultimately, I am optimistic that Congress will address these matters and that the executive branch will learn from this unfortunate experience. Thank you for your consideration. I greatly appreciate the opportunity to express my concerns. Mr. Chairman, I offer to work with you and the committee to resolve these issues.

Chronology of Port Newark/Elizabeth Dredging Permit

• Meeting w/Corps on PN/PE	February 15,1990
• Sampling Plan meeting w/Corps	March 9, 1990
• Sampling Plan obtained from Corps	April 5, 1990
• PA submits Formal Application to Corps	April 11, 1990
• Original Corps Permit expires	May 6, 1990
• Meet w/NJDEPE to confirm Testing Protocol	June 25, 1990
• Letter, Corps to ENSECO Lab, requesting QA data prior to initiation of 28 day test	June 19, 1990
• First Bulk Sediment Test Results available for Corps (Reaches B & D)	June 26, 1990
• PA submits Bulk Sediment Data to NJDEPE	July 11, 1990
• PA inspects labs (S. Solomon)	July 12, 1990
• Bulk Sediment Analyses formally submitted to Corps; PA requests go-ahead to start 28 day test	July 3, 1990
• PA submits additional information (boring logs) which Corps requested as a result of the 7/3/90 submission	July 23, 1990
• PA compiles data summary sheets of data supplied on 7/23/90, which Corps had requested	August 17, 1990
• Corps provides PA with approved sampling schemes concurrence to start-up 28 day testing	September 6,1990
• PA requests EPA's concurrence w/Corps' 28 day sampling plan; PA meets v/ PA, gets verbal ok	September 7, 1990
• EPA forwards written concurrence	September 11,,1990
• Port/Eng. Dept. gives Materials Div. formal authorization to proceed w/28 day testing	September 20, 1990
• PA submits concurrence (EPA/Corps) to NJDEPE	September 20, 1990
• PA staff meet at ENSECO facility to discuss	October 1, 1990

discrepancies in the report

• PA notifies ENSECO to repeat 28 day test	November 21, 1990
• PA submits Bioassay data (except for 28 day tests) to the Corps	January 4, 1991
• Corps sends comments to PA regarding 1/4/91 submittal	February 15, 1991
• Results of 28 day re-test (see 11/2.1/90) verbally reported to PA by ENSECO	March 14, 1991
• PA submits response to Corps comments of 2/15/90 and submits 28 day data	March 19, 1991
• PA submits formal application with all test results to NJDEPE	March 27, 1991
• NJDEPE Permit expires	April 4, 1991
• Corps requests additional information (to PA 3/19/91 submittal on the data	April 29, 1991
• PA responds to 4/29/91 comments	May 9, 1991
• Corps requests additional "clarification of data"	May 22, 1991
• Corps requests additional "clarification of the data"	May 30, 1991
• PA responds to Corps 5/22 and 5/30 comments	June 13, 1991
• PA submits draft Risk Assessment (EA) report to Corps	June 19, 1991
• NJDEPE issues permit with no barge overflow	July 1, 1991
• PA responds to NJDEPE barge overflow - restriction	July 25, 1991
• Corps WES provides comments on EA.Report	August 6, 1991
• Interagency Dioxin Steering Committee meets	September 11, 1991
• Corps provides.new sampling plan for re-testing of Reach A	November 15, 1991
• Corps issues 30 day public notice for Reaches B, C, and D states that Interim Guidelines for Dioxin have been established	November 25, 1991

(25 pptr. capping)

• Corps issues public notice announcing a public hearing (to be closed 3/6/92)	January 24, 1992
• Corps issues public notice which extends comment period to 3/16/92	February 21, 1992
• Public hearing held	February 24, 1992
• End of comment period	March 16, 1992
• Corps/EPA agree on interim guidelines for dioxin disposal	March 11, 1992.
• PA responds to EDF June 1992 critique of EA Report and EDF 3/16/92. comments on Public Notice	June 24, 1992
• PA responds to Public Notice/Hearing comments	June 18-26, 1992
• Letter, EPA to PA, stating further criticism of Risk Assessment	July 13, 1992
• Letter, .EDP to Corps/EPA, questioning interim criteria,. need for EIS (dioxin), baseline data at Mud Dump,.more public noticing.	July 29, 1992
• Letter, EDP to PA still questioning.interim criteria and Risk assessment	August 10, 1992
• Memo, PA,.indicating Corps wants a dioxin pre-tested material or sand cap	September 11, 1992
• Letter, EPA to PA requesting further coordination on Risk Assessment information	September 25, 1992
• Letter, PA to Corps formally requesting modification of PNJPE application to use Ambrose as second source cap	October 6, 1992
• Letter, NJDEPE to PA, modifying NJDEP Permit to include overflow monitoring	October 8, 1992
• Letter, PA to NJDEPE, accepting the 10/8/92 NJDEPE permit modification	October 9, 1992
• PA submits Reach A re-test data to Corps	October 14, 1992
• Corps issues Supplemental Public Notice.for Ambrose cap	October 19, 1992

• EDF letter to Corps/EPA/NJDEPE/DEC/PA requesting EIS related to dioxin, PCBs and cumulative effect of sand mining	November 4, 1992
• F&WS letter, to Corps requesting extension of comment period on cap to 12/9/92	November 18, 1992
• Memo, PA, announcing meeting to be held between PA/Corps/EPA/NJDEPE/EDF	November 20, 1992
• Letter, Corps to PA transmitting comment letters from cap supplemental Public Notice	November 24, 1992
• PA submits formal application for Reach A	November 19, 1992
• Letter, EPA to Corps approving Management Monitoring Plan at Mud Dump	December 4, 1992
• Letter, USF&WS to Corps stating objections to permit and referring to elevation procedures in event of Corps' issuance of the permit	December 9, 1992
• PA responds to cap Public Notice comments (other than 12/9/92 USF US letter)	December 9, 1992
• Letter, EPA to Corps, reneging on the 25 pptr criteria	December 31, 1992
• Letter, EDF to Corps/EPA mimicking EPA letter of 12 /31/92	January 4, 1993
• Corps issues permit for 500,000 cubic yards	January 6, 1993
• Letter, EDP to Corps/EPA/DEP, raising volume/testing issue	January 11, 1993
• Letter, EPA to Corps, mimicking DEF letter of 1/11/93 and reneging on ocean disposal	January 13, 1993
• Letter, PA to EPA, defending volume-testing issue	January 13, 1993
• Letter, Corps to PA, suspending permit	January 14, 1993
• Letter, EDF to Corps, objecting to volume of material and seeking re-testing of dredged material	January 13, 1993
• Letter, PA to Corps, requesting meeting on 1/19/93 to discuss permit issues	January 15, 1993

• Letter, Corps to PA, notifying PA that Corps and EPA are available to meet on 1/27/93	January 15, 1993
• Letter, PA to EPA, affirming volumes to be dredged	January 26, 1993
• PA meets with Corps/EPA	January 27, 1993
• EPA two-day conference on Dredging and Disposal of NY/NJ Harbor Sediments	January 27, 28, 1993
• Letter, EDF to EPA, raises bio - accumulation issue throughout harbor and criticizes criteria level of 10 ppt	January 29, 1993
• Letter, NMFS to EPA, raises Endangered Species Act issue	February 2, 1993
• Corps and Port Authority meeting to clarify outstanding issues raised during suspension and 1/27/93 meeting	February 4, 1993
• Congressional.Forum on dredging	February 5, 1993
• Letter, PA to Coast Guard requesting review of safe berth depth for facility	February 9, 1993
• Letter, EPA to Corps, specifies conditions that have to be met for re-issuance of permit.for Reaches B and C, while Reach D is acceptable without further testing	February 12, 1993
• Letter, EDF to Corps, requesting a meeting and opposing EPA's decision not requiring additional testing for Reach D	February 17, 1993
• Letter, Corps to PA, requiring all Reaches to be tested for dioxin using same methods as in 1990.	February 18, 1993
• Letter, PA to EPA, seeking clarification and sign-off on sampling and testing protocols.	February 24, 1993
• Letter, Corps to NMFS, answering Endangered Species Act issue.	March 5, 1993

• Letter, PA to Corps (copy EPA) transmitting dioxin re-test results.	March 12, 1993
• Letter, EPA to Corps, approving material for ocean disposal based on the dioxin re-test results. -However, EPA likewise directed the-Corps to resolve concerns of the National Marine Fisheries Service regarding endangered species at the Mud Dump site.	March 29, 1993
• NMFS issues biological opinion on Endangered Species Act resulting in special conditions to be incorporated into the upcoming reissued permit.	May 6, 1993
• Reinstatement of permit by the Corps.	May 26, 1993
• Suit filed by Clean Ocean Action against the Corps.	June 1, 1993
• Commencement of Dredging.	June 2, 1993
• Issuance of order by Judge Debovoise · regarding further testing, regulations and Green Book procedures.	July 6, 1993
• Completion of dredging.	July 7, 1993
• Commencement of capping.	July 12, 1993
• Commencement of surveys. -	Sept. 12, 1993
• Commencement of final capping.	Sept. 17, 1993
• Completion of capping.	October 13, 1993
• Commencement of surveys by Corps.	October 18, 1993
• Filing of briefs with Court. '	October 29, 1993

OCEAN DISPOSAL PERMITS STATUS
1994

APPLICANT	WATERWAY	STATUS	VOLUME IN CUBIC YARDS	PRIORITY & COMMENTS
1 - Con Edison of New York, 59th Street	Hudson River, N.Y.	Issued	44,000	
2 - Tower Ridge Yacht Club*	Hudson River, N.Y.	Issued	15,000	
3 - Refined Sugars	Hudson River, N.Y.	Issued	60,000	
4 - US Gypsum*	Hudson River, N.Y.	Issued	115,000	
5 - Yonkers Yacht Club, Yonkers*	Hudson River, N.Y.	Issued	8,575	
6 - Port Authority Brooklyn Marine Terminal	East River, N.Y.	Issued	500,000	Requested to reduced volume to 325,000
7 - Con Edison of New York	The Narrows (Brooklyn, N.Y.)	Issued	24,000	
8 - Northville Linden	Arthur Kill, N.J.	Further Testing Required	18,000	
9 - CITGO Petroleum	Arthur Kill, N.J.	Further Testing Required	11,000	Dioxin CFR
10 - Con Edison of N.Y.	Arthur Kill, N.Y.	Further Testing Required	87,000	Dioxin CFR
11 - Port Authority, Bergen Basin	Jamaica Bay, N.Y.		38,000	Application Withdrawn
12 - Shell Oil Co.	Arthur Kill, N.J.	Further Testing Required	10,500	
13 - Chevon	Arthur Kill, N.J.	Further Testing Required	63,000	

14 - Port Authority Howland Hook Marine Terminal	Arthur Kill, N.Y.	Further Testing Required	150,000	Must dredge in order to lease facility
15 - Atlantic Salt	Arthur Kill(?), should be Kill Van Kull, N.Y.	Further Testing Required	20,000	
16 - NJDEPE, Liberty State Park, Morris Canal Basin	Hudson River, N.J.	Further Testing Required	110,000	
17 - City of Perth Amboy	Arthur Kill, N.J.	Further Testing Required	30,635	
18 - Amerada Hess*	Newark Bay (?), N.J.	Further Testing Required	39,000	
19 - Vinco Marine*	Flushing Bay, N.Y.	Further Testing Required	25,000	
20 - EARLE; Weapons Station	Sandy Hook Bay, N.J.	Further Testing Required	500,000	
21 - EXXON Co. USA	Kill Van Kull, N.J.	Further Testing Required	100,000	
22 - Mobil Oil Corp.	Arthur Kill, N.Y.	Further Testing Required	80,000	
23 - MOTBY	New York Harbor, N.J.	Further Testing Required	183,000	
24 - Stratus	New York Bay, N.J.	Further Testing Required	100,000	
25 - Bayway Refining Co.	Arthur Kill, N.J.	Preapplication Stage	25,000	
26 - British Petroleum	Arthur Kill, N.J.	Preapplication Stage	50,000	
27 - Texaco	Newark Bay, N.J.	Preapplication Stage	15,500	

28 - NYC DEP North River	Hudson River, N.Y.	Preapplication Stage	15,000	
29 - Dupont	Arthur Kill, N.J.	Preapplication Stage	unknown	
30 - Con Edison of N.Y., Manhattan	East River, N.Y.	Preapplication Stage	9,000	
31 - Celanese Chemical	Passaic River, N.J.	Denied	25,000	Selling Plant
32 - Borough of Belmar	Shark River, N.J.	Disposal alternatives Under Consideration	50.000	Not going to the Mud Dump Site
33 - Port Authority, Port Newark Channel Berths (Reach A)	Newark, N.J.	Disposal Alternatives Under Consideration	50,000	

Testimony of

JANEEN S. HANSEN

**PROJECT MANAGER, BOSTON HARBOR DREDGING PROJECT
MASSACHUSETTS PORT AUTHORITY**

Before the

**Subcommittee on Oceanography, Gulf of Mexico,
and the Outer Continental Shelf**

Merchant Marine and Fisheries Committee

June 14, 1994

Testimony of

JANEEN S. HANSEN

**PROJECT MANAGER, BOSTON HARBOR DREDGING PROJECT
MASSACHUSETTS PORT AUTHORITY**

June 14, 1994

Good morning, Mr. Chairman and Members of the Subcommittee. My name is Janeen Hansen and I am the Project Manager of the Boston Harbor Dredging Project. I am testifying today on behalf of the Massachusetts Port Authority. Massport appreciates the opportunity to participate in this important hearing on needed improvements to the dredging process.

Dredging policy is an issue we have struggled with locally, and we believe federal attention to this problem is both appropriate and long overdue. The Port of Boston is committed to environmental protection within the context of promoting and enhancing commerce and international trade. We hope that the comments offered here will help rationalize the environmental review and permitting processes of the Ocean Dumping Act and focus more federal attention on the need for research and development of treatment technologies for dredged material.

BACKGROUND

Massport is a partner with the U.S. Army Corps of Engineers in the Boston Harbor Navigation Improvement Project (federal navigation channels) and the Boston Harbor Dredging Project (public and privately owned berths). The Federal navigation system for Boston Harbor is the result of over 20 Congressionally authorized projects carried out over the past 170 years. The latest proposed navigation improvement project began with studies in 1968; the recommended project was authorized by Congress in the 1990 Water Resources Development Act.

The project, as proposed, would dredge approximately 3 million cubic yards of material from three tributary channels and selected berthing areas. Of the 3 million yards of material, approximately 1 million is contaminated, primarily with petroleum hydrocarbons, organics, and heavy metals.

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PERMIT PROCESS

Massport entered into the environmental review process in 1991 with a state filing (Massachusetts Environmental Notification Form) and subsequent Environmental Impact Report. The Corps scoping session for an Environmental Impact Statement was conducted in 1992. Massport and the Corps prepared and filed a joint EIR/EIS document in April 1994 that covers both the ship channels and the berthing areas.

Dredging Advisory Committee

Recognizing the increasingly controversial nature of dredging projects, Massport convened a group of federal and state regulatory officials, environmental interest groups, and shipping industry representatives to guide us through the environmental process. Our intent was to consider various points of view along the way, with the goal of achieving a consensus about the project: the need to dredge, the appropriate sampling and testing protocols, appropriate interpretation of test results, acceptable disposal options, and financial feasibility of the project. Our experience was that we achieved moderate consensus about the need to dredge and about sampling and testing techniques, but the consensus ended there.

Need For Common Framework

There is a need to develop a common framework for interpreting the sediment test results, for agreement on the protocol does not mean agreement on the interpretation of results. Which tests are determinative in making an assessment? How does one weigh the chemical and biological test results? Is acute biological toxicity more critical than the bioaccumulation of materials?

Gridlock - Regulatory and resource agencies have multiple, overlapping, and conflicting jurisdiction over the process of permitting a dredging project. Each has a mandate to protect a specific environmental or natural resource, but only the Corps of Engineers is charged with ensuring that navigation channels are deepened or maintained. The real challenge to project proponents is to get agreement among the permitting agencies on what materials should be placed where, and how. For example, certain dredged materials, which are highly contaminated, clearly are and will always be unsuitable for unconfined ocean disposal. Other materials are considerably less contaminated but not quite "clean" and hence, need to be seen in a different light. Their disposal needs to be treated differently from that of highly contaminated materials. The simple "pass/fail" test is inadequate for all materials.

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Benefit/Cost - The benefit/cost ratio now used by the federal government for dredging projects requires the federal government to choose the least cost, environmentally acceptable plan. Local sponsors pay the difference if a more costly plan is selected. "Environmentally acceptable" disposal plans will cost much more than traditional methods of disposal (ocean dumping). Even if agreement could be reached on the definition of "environmentally acceptable", most of the dredging projects currently planned would fail the benefit/cost test. Such a situation presents serious problems for the future of seaport operations and seaport development in the U.S. Consideration ought to be given to redefinition of the "benefits" of dredging projects so that environmental clean-up that occurs as a consequence of dredging is counted as a benefit of dredging.

New R & D - There is a need for the federal government to fund and permit new research and development efforts in technology for the treatment and management of dredged material. Not only should there be a focus on the very highly contaminated dredged material, but there should be consideration of the dredged material that has "failed" the chemical and biological tests by a small degree. With new cost-effective technologies, some of the material that now fails the tests might receive a passing grade, or could be converted to beneficial uses. Regulatory and resource agencies must participate in review and evaluation of these new technologies to ensure that the technologies themselves can be permitted.

PROJECTED DREDGING NEEDS

6 Million Cubic Yards of Sediments

The Corps of Engineers has projected dredge sediment disposal needs for the three tributary channels and the main ship channel in Boston Harbor based on prior experience with siltation in these locations. The estimated 50-year need for maintenance dredging (not deepening), is 1.76 million cubic yards from three tributary channels and 4.37 million cubic yards from the main ship channel, a total of over 6 million cubic yards of sediment. Because it is silt material, it is likely that it will be contaminated. This figure is above and beyond the 3 million cubic yards estimated to be dredged in the currently proposed Boston Harbor Improvement Project. Further, it does not include material that will need to be dredged in the future from berthing areas in the Port, nor does it include dredging needs of other harbors and channels in Massachusetts. It is a minimum number.

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Costs of Future Dredging and Disposal

Estimating the cost of future dredging is difficult, at best, because the costs are highly dependent on disposal options. Given the likelihood that future maintenance material will be contaminated, disposal of it will require some form of physical confinement (capping, borrow pits, etc.) or treatment (solidification, bioremediation, thermal conversion, or other treatment).

Capping future maintenance material will likely be more costly than capping material from the proposed Boston Harbor project because, unlike the deepening project, future maintenance would not generate sufficient clean capping material (such as the Boston Blue Clay anticipated from the Boston Harbor Improvement Project).

The Corps estimates the cost of dredging and capping in the Boston Harbor project to be approximately $18 per cubic yard. The minimum cost to dredge and cap 6 million-plus cubic yards of future maintenance material would be over $100 million.

Treatment technologies are not yet developed for large scale projects. They are limited by technology, logistics, cost, and permitability. Current treatment technologies run between $55 and $750 per cubic yard. Using a worst case assumption for 6.13 million cubic yards of material, the future cost to dredge Boston Harbor and treat all of the dredged material could approach $4.6 trillion in 1993 dollars. Further, treatment technologies, as yet, have no known evaluation criteria for permitting. Even if we could afford to "treat" the material from Boston Harbor, it is unclear what permits might be required by regulatory and resource agencies. We don't yet know the potential side effects of the "cure" for the dredge material disposal problem. Finally, treatment technologies currently have a limited through-put capacity, and treatment cannot occur at a rate even close to the production rate of dredging equipment.

Clearly, more work needs to be done to move treatment technologies out of the laboratory and into the real world. Technologies must be affordable, permittable, and physically practical in dense, urban areas where most contaminated dredged material is concentrated. Also, these technologies must be able to process material at the same rate that the dredge produces it.

WORLDWIDE TRANSPORTATION SYSTEMS

The Port of Boston has been an active port for over three centuries, providing infrastructure to support commerce for all of New England. The port provides jobs for over 9,000 people; it is the lifeline of the region's energy supply for 1.3 million households, numerous businesses, industries, and institutions; and it is part of the transportation system linking New England and the Midwest to producers and consumers worldwide.

The No Build Alternative option is not a solution to New England's needs. The future of this region depends on an active, vital, 21st Century port, which cannot transpire without adequate dredging. Massport is committed to finding an environmentally acceptable solution to the problem of dredging and dredged material disposal, but we need federal help. We appreciate your interest in this issue and look forward to development and passage of a national dredging policy that addresses the concerns of the Port of Boston and of many of our sister ports around the country.

Thank you Mr. Chairman for the opportunity to testify today. I would be happy to answer any questions you or Members of the Subcommittee may have.

Public Testimony

of

Paul D. Carangelo
Coastal Environmental Planner
Port of Corpus Christi Authority

before the

U. S. House of Representatives
Committee on Merchant Marine and Fisheries
Subcommittee on Oceanography
Gulf Of Mexico and the Outer Continental Shelf

on

June 14, 1994

Public Testimony
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Paul D. Carangelo
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June 14, 1994

Good morning, my name is Paul Carangelo, Coastal Environmental Planner for the Port of Corpus Christi Authority. It is a pleasure to be here this morning representing Mr. Harry G. Plomarity, the Executive Director of the Port of Corpus Christi Authority. Mr. Plomarity could not be here today as he is attending his last meeting of the Board of Port Commissioners of the Port of Corpus Christi after a career of more than 40 years at the Port, the last 18 as its Executive Director. I will be presenting prepared remarks concerning the effect of federal and regional dredging policy on the operation of the Port of Corpus Christi.

Background

The Port of Corpus Christi is the sixth largest port in the United States in terms of total cargo tonnage. The Port of Corpus Christi Authority harbor facilities are connected to the Gulf of Mexico by the 30-mile long Corpus Christi Ship Channel and 6-mile long La Quinta Channel, both of which have federally authorized and maintained depths of 45 feet. What does this navigation infrastructure provide to the region and the nation?

* In calendar year 1993, over 76.5 million tons of cargo, most of which related to the petro-chemical industries of South Texas, moved across the public and private docks located along the ship channels.

* The Port of Corpus Christi is one of the deepest ports in the Gulf of Mexico and is one of the cleanest ports in the country. It is sited within the highly productive Corpus Christi Bay Estuary which is an important and sensitive fishery resource and a major recreational destination.

* Naval Station Ingleside is one of the Navy's most modern deep draft berths in the United States and is now the Homeport for the Minesweeping Center for Excellence.

* Port maritime related activities generate over 38,000 jobs and are responsible for a regional economic impact of $9.4 billion in sales.

Mission of the Port of Corpus Christi

The mission of the Port of Corpus Christi is to serve as a regional economic development catalyst while simultaneously working to protect and enhance the region's existing industrial base and to diversify its international maritime cargo business. All of these sectors are experiencing rapid growth. However, during pursuit of this economic mission, the Port Authority strives to be a positive and proactive force in the environmental protection, restoration and enhancement of the region's marine and water-related natural resources. It is our position that a strong and sustainable economy is dependent upon a healthy and productive ecosystem.

Dredging Issues

Like all major world ports, the Port of Corpus Christi is a vital link to domestic and international trade in peace time and of strategic importance during a national defense emergency. Properly maintained access channels and berthing areas are essential to the marine transportation components of the United States port system. However, in order for the port system and vessel operations to function in a safe and efficient manner, timely and effective dredging and placement of dredged material is absolutely essential.

While the Port of Corpus Christi has successfully managed its dredging needs in the past, it views the future with marked concern. New or proposed administrative and environmental requirements on the federal, state and local levels appear to be making it more difficult for the federal government and deep-draft port facility owners to proceed with their essential dredging operations in a timely and cost-effective manner.

Policy Issues

The Port of Corpus Christi, along with other member ports of the American Association of Port Authorities (AAPA), has been closely monitoring a number of regulatory and policy issues on the federal and state levels. These include the Clean Water Act amendments, the Ocean Dumping Act, the Endangered Species Act reauthorization, and the Marine Protection, Sanctuaries and Research Act—to name a few federal issues. Examples of regional issues include, but are not limited to, the Gulf of Mexico Program, the National Estuary Program and the Texas Coastal Management Program. Various international environmental policies, such as that of the London Convention, influence national and regional dredged materials management policy.

Interagency Working Group Report on the Dredging Process

Recently we have evaluated the Interagency Working Group report produced through the U.S. Department of Transportation Maritime Administration in cooperation with representatives from the Environmental Protection Agency, the Department of Interior's Fish and Wildlife Service, the National Marine Fisheries Service and the Office of Ocean and Coastal Resource Management from the Department of Commerce, the

Department of the Army and its Corps of Engineers. As you are well aware, this interagency group was formed by U.S. Secretary of Transportation, Federico Pena, in cooperation with other cabinet members and agency heads last Fall in response to the Administration's clear interest in improving the dredging process.

The Group's efforts have complemented other Administration initiatives which have been extremely helpful on focusing much needed attention on the number one problem facing the nation's ports today—the dredging of our waterways in order to keep them open for safe domestic and international commerce.

The Port of Corpus Christi Authority supports the broad objectives of the Group which are to:

* Promote greater certainty and predictability in the dredging and dredged material disposal process by reviewing and identifying ways of improving interagency coordination, information gathering, criteria review, and overall sequencing of approvals; and,

* Facilitate effective long-term management strategies for addressing dredging and disposal needs at both the national and local levels.

Earlier this year, the Group identified five issue areas and many options which could be used to help resolve some of the problems associated with port development and the dredging process. The five issue areas are:

* Federal Interagency and External Coordination;

* Proactive Local Planning and Coordination;

* Dredged Material Disposal;

* Dredging Policy; and,

* Funding and Project Development.

Although the Port of Corpus Christi Authority strongly supports the stated objectives of the Group in promoting greater certainty and predictability in the dredging and dredged material disposal process and the facilitation of long term management strategies for dredged material, many of the proposed options, unfortunately, do not appear to yet focus on concrete ways to expedite the process and, in some cases, they may add an additional level of review.

In our opinion, some of the options being contemplated, particularly those that relate to establishing a national dredging policy and improved interagency coordination, could improve the dredging process, but they need to be much more specific in order for AAPA member ports to support them without reservation. Many of the options under

consideration by the Group, including long-term planning, proactive local planning and broad community outreach, and coordination with the public, are already being implemented in port communities in response to specific projects.

While these suggestions are welcome, what ports need is reform in the regulatory and/or the administrative process to: (1) make the federal and state regulatory agencies more responsive to the needs of the permit applicant and (2) to address the issue of costs and necessary funding associated with any proposed initiative. Is also felt that a clear statement of national dredging policy goals by President Clinton's Administration is crucial if the Group hopes to obtain their stated objectives.

<u>Regional Dredging Concerns</u>

Of particular concern to the Port of Corpus Christi Authority is the method of placement of the dredged material during the periodic maintenance of our ship channels and berths. Currently, the Port maintenance dredges about 3 million cubic yards on an annualized basis. The majority of the material is pumped to confined upland facilities, but about 25 percent goes to open water in either Corpus Christi Bay or by hopper dredge to an EPA permitted ocean site in the Gulf of Mexico.

Although the Port Authority owns over 23,000 acres of property, approximately 75 percent of it is submerged. Most of the emergent property is dedicated for use as upland, confined placement areas for dredged material, or will not likely be utilized due to environmental considerations.

Open water placement for certain portions of the channel is still permitted, but the future of existing open water sites appears to be in doubt. Should the use of the currently permitted open water sites be discontinued, not only would the projected capacity of the port's upland sites be impacted drastically, but the cost of the actual dredging may increase ten times current costs.

While upland placement is often perceived by some as a preferred, if not a mandatory, option, open water placement should not be eliminated unless there are proven unacceptable environmental impacts. In many cases, open water placement of dredge material actually has had or can be managed to have a positive net benefit to estuarine systems through the creation of shallow water habitat, emergent wetlands, oyster and reef structures, and possible nourishment of benthic communities. The beneficial use of dredged materials must continue to be recognized in any policy on the federal and regional levels.

In many cases, the federal government is not currently managing the available upland, confined placement areas in a prudent manner. The capacity of these finite resources must be maximized. The Corps of Engineers has a Long-Term Management Strategy program but apparently lacks sufficient funding to do little more than talk about its applicability. The failure to properly de-water and consolidate these areas will only be exacerbated by the increased costs of future dredging brought about by longer

distances to other disposal sites. Money spent now to obtain additional capacities from existing sites will be less than the future increase in dredging costs for new sites. Long-Term Management Strategy is an investment in the future that should pay dividends. Failure to invest now will only cost the federal government even more money in the future.

In addition to de-watering, the Port of Corpus Christi is actively engaged in a program to sell dredge material. This material is used as clay cover for closing industrial waste ponds, sand for select fill and asphalt pavements. In fact, we presently have a sand screening plant set up in one of our dredge material areas that is projected to reclaim over 100,000 cubic yards of material per year. This earns the port approximately $1.00 per cubic yard of material and replenishes our capacity for new dredge material.

The Port of Corpus Christi is investing significant resources (over $1.5 million) in exploring new ways to increase the efficiency of movements of one of our main cargoes. For example, crude oil accounts for over 80 percent of our total tonnage. The majority of this cargo is brought in by a "lightering" process because the very large crude carriers (VLCCs) that are use to import this oil from overseas need a channel depth of more than 75 feet. This costly process requires four to five smaller ships to pick up their loads of crude oil out at sea from the large tankers and travel into the inner harbor. This creates increased channel congestion and risks of fire, explosion and pollution. Four years ago, our port began detailed studies (locally funded) to develop a deep water terminal on shore that would permit these large tankers to come directly into the port and discharge their cargo in one trip. This deep water terminal which would be totally funded by the Port and our customers would require a significant amount of dredging (estimated 74,000,000 cubic yards) in order to accommodate these large ships. Unfortunately, we have incurred significant opposition from local and national private environmental groups who seem opposed to any major dredging projects. This opposition threatens the development of this project which we believe would have a positive impact on the environment and the local economy.

We continue to search for an acceptable solution and are, at the present time, exploring another alternative involving an offshore monobouy. This alternative would allow a ship to tie up to a floating buoy 15 miles offshore in the Gulf of Mexico and discharge its cargo into a pipeline buried beneath the floor of the gulf. This alternative would not require any dredging. While simple in concept, we have not yet fully concluded that this alternative is technically feasible.

<u>Conclusion</u>

The Port of Corpus Christi Authority appreciates the opportunity to present testimony today. The Port recognizes that national, regional (state) and international dredging policies affect one another and that there are often inconsistent priorities and goals established which result in a process which is already too complex and expensive. It is our position that the result is typically one that is not necessarily protective of the

environment nor of the international economic competitiveness of United States deep draft ports.

We support cooperative development of a nationally consistent and pragmatic dredging policy with clearly established priorities that incorporates the essential national interests related to both maritime commerce and the environment. An affirmative Administration statement of policy in support of dredging and the need for streamline permit review is necessary to ensure continued agency cooperation and coordination.

As a member of the American Association of Port Authorities, the Port of Corpus Christi Authority has provided position papers on a National Dredging Policy, proposed revisions to the Clean Water Act and a variety of other policy matters related to dredging and ports that are before Congress and the states. Please continue to request the input of the AAPA and from member ports. Speaking on behalf of the Port of Corpus Christi, the Port will make every effort to work with involved parties to resolve these difficult issues.

Thank you and I would be happy to answer any questions.

TESTIMONY OF JOSEPH GERMANO

SCIENTIFIC APPLICATIONS INTERNATIONAL CORPORATION

Mr. Chairman, Distinguished Members of the Committee, I appreciate the opportunity to provide testimony on west coast dredging issues and alternative technologies for dealing with contaminated sediments and dredged material disposal.

As I'm sure others have pointed out, several hundred million cubic yards of sediment must be dredged from waterways and ports each year to maintain both navigable waterways and harbor facilities for commercial, defense, or recreational purposes; national average estimates from the Army Corps (responsible for maintaining 25,000 miles of navigable waterways) and private projects vary from approximately 300 - 500 million cubic yards of sediment of an annual basis. About 30 percent of all dredged material is disposed in marine environments; of this, approximately 55 percent is placed in estuaries, and the remainder in coastal waters or the open ocean. Finding suitable disposal sites is often cited by Corps' coastal district offices as their most difficult problem, and with the increased pressure on harbor development and channel deepening, an estimated additional 50 million cubic yards of sediment per year will be generated over the next decade with an anticipated estimate of 45 percent slated for ocean disposal.

WEST COAST DREDGING OVERVIEW

I have been asked to focus in particular on West Coast dredging issues as part of my testimony. To get to the punch line right away, the main dredging issue on the West Coast (as I'm sure you will hear in other areas) is clear guidance and effective methods for dealing with contaminated sediment, from the characterization and permitting process to identifying acceptable disposal or treatment alternatives. An important perspective to clarify right away is that one should view the world of dredged material in three pieces:

1. On a national scale, a large majority of material (well in excess of 80%) is clean sediments that satisfy all the requirements for unrestricted disposal, either unconfined aquatic disposal or another disposal alternative, such as beach nourishment or wetlands restoration;

2. There is a portion of the material that is not suitable for unrestricted disposal but also is not a dangerous or hazardous waste by federal or state regulations. It is viewed as contaminated or polluted; this material can be handled by confined aquatic, nearshore, or upland disposal.

3. Finally, there's a portion of material that is classified as bona fide dangerous and hazardous waste that needs to be treated by the more expensive remediation technologies; fortunately, this accounts for a relatively small volume of the material that needs to be dredged.

When I stated initially that the problem is with contaminated sediments, I am referring to this second category, sediments that are classified as contaminated but are not a dangerous or hazardous waste. The dilemma facing many coastal areas and the mistake that is often made is when we try to find expensive remediation technologies to deal with this intermediate class of dredged material. Costs in excess of $40/yd^3$ to several hundred dollars per cubic yard for treatment are not uncommon, and this is the crux of the issue in many coastal districts. While it is a natural desire in the regulatory world to want to classify everything in a binary fashion (e.g., on or off, yes or no, hazardous or safe), dredged material, like life, is not that simple. It is not a black or white world; there is a great deal of gray area, and dealing effectively with this gray area is the key issue facing the regulatory and science community, state and federal resource managers, Port Authorities and permittees, and concerned citizens groups.

Starting at the north end of the coast and working south, dredging in the Puget Sound is overseen by the US Army Corps of Engineers (USACOE) Seattle District and monitored under the auspices of the Puget Sound Dredged Disposal Analysis (PSDDA) program. The district's principal responsibilities are to maintain shipping channels in Puget Sound, including Elliott Bay and the Seattle-Tacoma area, areas to the north such as the Ports of Everett and Bellingham, and the Washington west coast, such as channels in Grays Harbor and Willipa Bay. Historically, the largest volumes have been dredged from Grays Harbor, which accounts for 85% of the material. Approximately 2½ - 4 million cubic yards of material are dredged on an annual basis, and historically, the bulk of material in the District has gone to open water disposal sites or used for beach nourishment. Costs for unrestricted disposal average about \$3 per cubic yard; there is one restricted dredging project of 200,000 cubic yards scheduled for 1998 at a planed cost of $15/yd^3$. Future dredging costs are projected to average about \$5.5 million dollars annually.

Important current dredging/disposal issues identified by the Port of Seattle focus on four areas: getting permits, having a disposal site for contaminated materials, mitigation techniques, and impacts on tribal treaty rights. The Port has identified their ability to deal with contaminated sediments as a classic "chicken and egg" situation: if they had a method to deal with contaminated sediments (disposal site or cost-effective remediation technology), they would have up to one million cubic yards to dredge; otherwise, there would be minimal dredging done in the future. They have also stated a need for better federal guidance on determining contaminated vs. uncontaminated sediments as well as assistance in working out confined disposal options.

Dredging in the state of Oregon is overseen by the USACOE Portland District and averages about 12.5 million cubic yards per year. The largest percentage comes from the upper Columbia and Lower Willamette Rivers (44%), the mouth of the Columbia River (37%) and Coos Bay Harbor (10%), with the remainder from smaller projects in other rivers and bays. Less than 1% of the material is placed in upland disposal sites, with the bulk of the material going to open ocean disposal sites. Costs for unrestricted disposal average between $3 - $5 per cubic yard. Contaminated sediments do not appear to be a pressing problem in this region of the coast; since 1989, only one project in the Willamette River has been found to be unsuitable for unconfined in-water disposal.

Dredging in California is overseen by both the San Francisco and Los Angeles Districts of the Corps. The San Francisco District principal dredging responsibilities are maintaining channels from Monterey to Humboldt Bay; larger projects include Richmond Harbor, San Francisco Harbor, Humboldt Harbor and Bay, San Pablo Bay/Mares Island Strait, Oakland Inner and Outer Harbors, and Redwood City Harbor. Historically, the District has managed an average annual volume of 2-3 million cubic yards of dredged material. For many years, the bulk of disposed material in the San Francisco District has gone to one of several open water in-Bay disposal areas; since January of 1992, there has been a moratorium on all in-Bay disposal for new construction dredging. Dredging was effectively halted in the Bay until designation of the deep-water ocean disposal site off the Farallon Islands (in the final EIS stage right now and used as a 103 disposal site for Alameda Naval Air Station dredging). A very small percentage (2-4%) historically has gone to upland disposal sites. Open water disposal costs for in-Bay disposal have averaged about $4/yd^3, and restricted upland disposal about $26/yd^3.

In 1990, a regional plan for dredged material was developed as part of a 50-year Long Term Management Strategy (LTMS); this Federal/State partnership between the four agencies that have regulatory authority for dredged material in San Francisco Bay (the Army Corps, US EPA Region IX, the San Francisco Bay Regional Water Quality Control Board [RWQCB], and the San Francisco Bay Conservation and Development Commission [BCDC]) outlined a plan for disposal of up to 400 million cubic yards of material over the next five decades. These included several large "New Work" projects that have not been without their share of controversy: deepening of Oakland and Richmond Harbors, the J.F. Baldwin Ship Channel, and dredging of the Alameda Naval Air Station at Oakland.

Construction of the proposed navigation improvements to the Port of Oakland was authorized in the 1986 Water Resources Development Act; vessel delays of up to 3 hours (due to tides)

with the existing channel depths were not uncommon. The proposed channel and berth improvements would involve the dredging and disposal of approximately 6.6 million cubic yards; approximately 3.4 miles of the outer harbor and 4 miles of the inner harbor would be dredged. Because of the volume and nature of the sediments, concerns included sediment suitability for various disposal sites and uses; potential impacts on natural resources in the ocean, in-Bay, or upland disposal sites; socioeconomic concerns (e.g., impacts on commercial and recreational fisheries); methods for identifying and screening alternatives; and the cumulative impacts of the proposed project with the other projects encompassed by the interagency LTMS. During the past seven years there have been numerous studies and a few construction attempts with subsequent court actions. In the most recent supplemental EIS, a total of 23 disposal sites were initially considered. Fifteen were subsequently dropped from further consideration and the remaining eight were analyzed in detail. Because none of the eight remaining sites could accommodate the total volume due to site capacity limitations or site restrictions due to sediment quality, they were grouped in different combinations to develop 12 project alternatives. The alternative chosen was one to achieve maximum wetland restoration and involves a combination of ocean disposal, a wetlands restoration demonstration project at Sonoma Baylands, upland disposal at the Galbraith Golf Course in Alameda County, and if required, additional disposal at one of three landfills.

A similar situation has occurred in Richmond Harbor; a total of 1.5 million cubic yards were scheduled to be dredged with disposal at the in-Bay disposal at Alcatraz. The environmental effects were addressed in a 1981 final EIS; however, due to the volume of material and the subsequent moratorium on in-Bay disposal imposed by the RWQCB and BCDC along with re-classification of the material from the project's upstream reach as unsuitable for unrestricted open-water disposal, additional options and supplemental EIS's were necessary. The recent final boundary designation of a Superfund site adjacent to the federal channel scheduled for dredging has defined additional areas of sediment that needed to be characterized. Thirteen years and sixteen studies/reports later, this project is still on hold pending results of the latest sediment classification results.

When dredging 1.2 million cubic yards of sediment to deepen carrier berthing areas at the Naval Air Station Alameda and Naval Supply Center Oakland was authorized by Congress in 1986, the Navy prepared environmental assessments for both sites in May 1988. Initially, the material was slated for in-Bay disposal at Alcatraz, and again, because of the volume and the subsequent in-Bay disposal moratorium, the Navy was encouraged to participate with the Corps of Engineers and EPA Region IX to identify a project-specific, temporary (MPRSA Section 103) deep-water ocean disposal site. Concurrent with this action, the Army Corps and

EPA Region IX in 1990 initiated an oceans studies plan to evaluate five potential offshore ocean disposal sites. Both the Navy's 103 site used this past year and the EPA's final 102 site is located southwest of the Farallon Islands, 55 nautical miles west-southwest of the Golden Gate Bridge on the lower continental slope in 2,900 meters of water. Whether or not this will be an economically viable option for the majority of maintenance dredging projects in the Bay area in the future remains to be seen.

Dredging and maintenance of the federal channels in southern California is overseen by the USACOE Los Angeles District. Both historical and projected future average annual volumes of material for the Los Angeles District range between one and two million cubic yards, with an estimated annual cost of \$3.5 - \$4.5 million dollars. Historically, the largest percentage of material is dredged from the Channel Island Harbor (48%), Ventura Harbor (17%) and Santa Barbara Harbor (13%). The bulk of material dredged in the District is sand and suitable for open water disposal or beach nourishment; historically, the majority (82%) has been used in beach nourishment. The costs associated with unrestricted dredging have ranged from \$2 - \$43/yd^3 with an average historical cost of \$5.40/yd^3; costs for restricted dredging within the district have ranged from \$6 - \$21/yd^3. The high value of \$43/yd^3 for unrestricted disposal was from a small volume (7,000 yd^3) from Vandenburg AFB that was mostly gravel (therefore not suitable for beach disposal) and placed at an upland disposal site.

Future expansion plans for the Ports of Long Beach and Los Angeles to handle expected increased trade volume with Pacific Rim countries outline the need for at least 38 new terminals on approximately 3,000 acres of newly developed or renovated land by the year 2020. The preferred alternative identified to accomplish this consists of dredging deepwater channels and using the material to construct new land for the development of the needed terminals.

In a draft EIS released in September, 1992, approximately 1.1 million cubic yards of material were identified for dredging in San Diego Bay by the U.S. Navy in the first two years of their five year plan for their vessel and carrier maintenance requirements; an estimated 5 million cubic yards per year was identified for dredging in 1995 and 1996 to accommodate carrier homeporting for two Nimitz Class and one smaller aircraft carrier. Investigations are still underway to characterize the sediments in the various areas scheduled for dredging. Material for unrestricted disposal will either qualify for beach nourishment, bayfront development, or disposal at the LA-5 disposal site. The Navy has estimated that 20% - 30% of the total material schedule for dredging may prove unfit for either

beach or ocean disposal; the best alternative for dealing with this 20-30% has not yet been identified.

The Port of San Diego has faced considerable problems within the recent past in dealing with contaminated sediments; a total of $5 million was spent for on-site remediation treatment of 30,000 yd^3 of material from the PACO site, a former copper ore rehandling facility (average cost of $167/$yd^3$). During the next 10 years, the Port estimates a need to dredge between 100,000 - 200,000 yd^3 of material, approximately 60% of which will be classified as unsuitable for unconfined open-water disposal. They have identified inconsistency between Federal and State regulations as one of the greatest sources of inefficiency and the greatest impediment to the dredging process. The Port has expended considerable funding on research and development designed to assist the management/treatment of contaminated sediments, but their budget cannot afford continued R&D efforts. They have stated that in order to be viable, sediment treatment and disposal costs for contaminated material (if they are to be treated as a hazardous waste) must be reduced to around $40/$yd^3$. Representatives from the Port have emphasized repeatedly the problem of having "too many players" in the process of dredged material management decisions with no clear guidelines for coordination and consistency; in an ideal world, the decision-making process would reside in a single agency.

ALTERNATIVE TECHNOLOGIES FOR DEALING WITH CONTAMINATED DREDGED MATERIAL

Dredging operations are conducted in three distinct phases: sediment removal at the dredging site, transportation of the material to the selected disposal area, and the actual disposal operation. There are a variety of control/treatment alternatives for limiting contaminant release during all three phases of the dredging operations, and given the distinct and significant differences in operation of the three most common disposal scenarios (open-water, nearshore, and upland), the control/treatment alternatives can be categorized as follows (Cullinane et al., 1986):

a. Control/treatment during dredging.
b. Control/treatment during transport.
c. Control/treatment for upland disposal
d. Control/treatment for nearshore disposal.
e. Control/treatment for open water disposal.

The selection of an appropriate control/treatment alternative requires that each be evaluated with a uniform set of criteria. Although important criteria will vary from region to region, some

of the typical criteria that can be used to evaluate all of these alternatives include:

- Reliability
- Implementability/availability
- Cost-effectiveness
- Technical effectiveness/efficiency
- Environmental concerns
- Safety
- Operation and maintenance
- Regulatory requirements
- Public acceptance

Given the variety of control/treatment alternatives and the variety of evaluation criteria, it is impossible to make general statements about the best alternative, and a thorough discussion of all the options in this 5 x 9 matrix is too lengthy to go into in these proceedings. I would like to focus my discussion on this subject in the area of emerging treatment technologies for treating highly contaminated sediment (what I would classify as hazardous waste). There are a variety of decontamination technologies that have been or are being developed to either reduce the volume and/or toxicity of contaminants contained within sediments. The majority of these are being developed by EPA's SITE and ARCS programs.

There are a number of generic technologies that can be used to treat contaminated sediments, and the most effective will depend on the type of contaminant and volume of material. These technologies include acid extraction, bioremediation, bioventing, chemical treatment, delivery/extraction systems, electrical separation, magnetic separation, materials handling, soil vapor extraction, soil washing, solidification, solvent extraction, stabilization, thermal desorption, and vitrification. Details on these methods can be found in EPA's SITE annual technology profiles. The US Army Corps Waterways Experiment Station recently performed bench tests on dredged material remediation technologies for the New York District using four different techniques: base-chlorinated decomposition, incineration, Basic Extractive Sludge Treatment (B.E.S.T.) system (Resources Conservation Company), and Thermal Gas-Phase Reduction Process (Eco Logic International, Inc). Costs for these range from $\$170/yd^3$ to $\$800/yd^3$, with volume capacities of 20 - 150 yd^3 per day.

The volume handling capacities and costs for these technologies are representative of all of those on the market today. The federal government is supporting technology R&D to the level of $4 billion per year and technology demonstration projects with funding levels exceeding $3 billion; however, the amount of money expended on phases beyond the demonstration level

is negligible. For whatever reason, many of these pilot innovative technologies fail to make it beyond the demonstration project stage. Those that do cannot handle the volume of material in a typical dredging program within a realistic time frame or for an economically sustainable cost. While there is a clear need for environmentally safe and cost-effective remediation technologies, at the present time it is not a viable option for dealing with anything other than relatively small volumes of what can truly be classified as dangerous or hazardous waste. According to initial classification scheme outlined at the start of this document, the second (intermediate) category of dredged material (polluted or contaminated sediment that is not dangerous or hazardous) is handled most effectively by alternative disposal options.

ALTERNATIVES FOR DREDGED MATERIAL DISPOSAL

There is a wealth of information and documentation on all aspects of dredging, from dredged material management, disposal options and monitoring techniques to physical and environmental impacts of dredging and disposal alternatives that is available from the years of research performed at the US Army Engineers Waterways Experiment Station in Vicksburg, Mississippi as well as results from regional monitoring programs such as the Disposal Area Monitoring System (DAMOS) in New England or the PSDDA program in Washington. The selection of a particular disposal management strategy must take into consideration a wide variety of factors (Francingues et al., 1985):

- Sediment quality
- Potential environmental impacts of the disposal of the dredged material
- Dredging equipment
- Project size
- Site-specific conditions
- Technical feasibility
- Economics
- Other socio-economic factors

There are three major alternatives available for dredged material disposal:

- Open water disposal (unconfined)
- Beneficial use
- Confined disposal (aquatic, nearshore, upland)

Each of these major alternatives involves its own set of considerations when evaluated under the 8 criteria listed above. The first two alternatives are routinely used for "clean"

sediments (those in the first category in the initial dredged material classification scheme).

OPEN WATER DISPOSAL: Open water disposal is the placement of dredged material in rivers, lakes, estuaries, or oceans via pipeline or release from hopper dredges or barges. The design of an open-water disposal site alternative has to incorporate both legal and oceanographic considerations. The EPA's five general and eleven specific legal criteria for designation ocean disposal sites are defined in the 11 January 1977 revision of the ocean dumping regulations at 40 CFR § 228.5 and 228.6(a). The oceanographic criteria used to choose a particular regional site will be dependent on the first-order question of whether or not the US Army Corps and EPA regional district offices want to manage a containment or dispersive site.

With an adequate site management strategy and sediment permitting screening criteria, open-water disposal is an environmentally safe and economically viable option. The potential environmental impacts of both confined and unconfined open water disposal are well known (e.g., USACOE/EPA, 1992; Dillon, 1992; Germano et al., 1992); both water column and benthic potential impacts are affected by the physical characteristics of the particular disposal site, the volume and toxicity of the dredged material, and the time of year when disposal occurs.

While guidance for evaluating sediment are provided in the "Green Book" testing manual (EPA/USACOE, 1991), the environmental discriminators when evaluating potential impacts for open water disposal (as well as other disposal alternatives) should be risk-assessment based. While the emphasis in the Green Book has always been on effects-based testing, Dillon (1992) has pointed out why a risk-based approach to assessing environmental impacts is needed:

- A regulatory decision will always be made;
- This decision will always be based on incomplete data;
- Data which are available will always have some uncertainty;
- Everyone will accept a certain level of risk and uncertainty
- Achieving zero environmental risk is not possible;
- Managing for near-zero risk is often cost-prohibitive

Decision trees have been developed by the EPA and Army Corps (USACOE/EPA, 1992) for determining the environmental acceptability of dredged material disposal alternatives and open-water disposal. More detailed ecological monitoring plans (EMP) can be developed for various regions in the country depending on the disposal alternatives selected; good examples of this can be

found in New England's DAMOS program (Germano et al., 1992) and Washington state's PSDDA program (EPTA, 1988).

The 1970's saw the growth of serious movements to ban the disposal of all wastes in the ocean, culminating in the Ocean Dumping Ban Act of 1988. Unfortunately, since the beginning of the environmental movement in the United States and elsewhere in the late 1960's, all wastes including municipal sewage effluents, industrial residues, and dredged materials were all lumped together and treated as one and the same by regulators. Gradually, regulators came to accept that dredged material possessed components that could bind pollutants in such a way that when on the ocean floor, they were not available to the biota (Pequegnat et al., 1990). Evidence from the Dredged Material Research Program carried out by the US Army Engineer Waterways Experiment Station throughout the 1970's as well as other dredged material environmental monitoring programs such as the New England Division's DAMOS program provided support that the ocean is the most appropriate of receiving environments for salt-laden dredged material. These findings, together with results showing that land disposal under some conditions could mobilize contaminants from dredged material caused the parties of the London Dumping Convention to recognize that dredged material should not be classified with industrial and municipal wastes. However, it has been my experience that in the public's mind, dredged material is still lumped in the same category as sewage sludge and considered an anthropogenic, toxic input to marine waters.

Unfortunately, there is still a great deal of public misconception and lack of education concerning ocean disposal of dredged material. There is a clear need for more public outreach and education so that resource agencies as well as concerned citizens groups are given sufficient information so that mutually agreeable, economically feasible, and environmentally acceptable alternatives can be implemented.

BENEFICIAL USE: Beneficial use is the one of the best examples of recycling by an agency on an national scale, where a material that historically had been treated as a "waste" can be utilized as a resource. When evaluating beneficial uses as potential alternatives for dredged material, the Army Corps always has to take into account the "3 E's": engineering feasibility, economic sense, and environmental sensitivity (Hatch, 1990). Beneficial uses, as the name implies, show up on the "benefit side" of a cost/benefit analysis, and it is important to bear in mind that the benefits can often be environmental and not just solely economic.

Beneficial use can include a wide variety of options which utilize dredged material for some productive purpose; ten broad

categories of beneficial uses for dredged material have been identified, based on the functional use of the dredged material or site (USACOE/EPA, 1992):

- Habitat restoration/enhancement (wetland, upland, island, and aquatic sites including use by waterfowl and other birds)
- Beach nourishment
- Aquaculture
- Parks and recreation (commercial and noncommercial)
- Agriculture, forestry, and horticulture
- Strip mine reclamation and landfill cover for solid waste management
- Shoreline stabilization and erosion control (fills, artificial reefs, submerged berms, etc.)
- Construction and industrial use (including port development, airports, urban, and residential)
- Material transfer (fill, dikes, levees, parking lots, and roads)
- Multiple purpose

The only potential use of contaminated material in a beneficial alternative application would be for sanitary landfill cover. Because most people in society have "written off" the area zoned for a landfill and, contrary to technical evidence, typically find land disposal more socially acceptable for contaminated dredged material disposal, social acceptability is usually not a roadblock unless there is concern for the possibility of groundwater contamination. Given the environmental and political correctness of "reuse and recycle", beneficial use alternatives probably meet with the most favor of all the possible dredged material disposal alternatives as far as social acceptability.

<u>CONFINED DISPOSAL:</u> Confined disposal options appear to offer the most viable solution for how to deal with the intermediate category of sediments (classified as polluted or contaminated but not a hazardous waste). Confined disposal is the placement of dredged material within diked nearshore or upland confined disposal facilities (CDFs) or using confined aquatic disposal alternatives (sub-aqueous capping, the use of borrow or containment pits with subsequent capping, or deep ocean isolation). The key considerations involved with determining the disposal alternative effectiveness are (Cullinane et al., 1986):

- The class of contaminants of concern
- The similarity of disposal site conditions to <u>in situ</u> conditions
- The number and magnitude of contaminant transport mechanisms operating at the disposal site.

- The degree of control or treatment possible to intercept migrating contaminant fractions
- The risk of significant adverse effects from contaminants released by the disposal method

CDFs: The three objectives inherent in the design and operation of CDFs are to provide adequate storage capacity for meeting dredging requirements, to maximize efficiency in retaining solids, and controlling contaminant releases (USACOE/EPA, 1992). CDFs differ in their geohydrology, sediment chemistry, carrier water removal, contaminant release rates, and contaminant pathways affected. The site specification for CDFs is much more complex than for open-water sites. Real estate considerations are a major factor in determining the availability of potential sites and usually represent a substantial economic investment on the part of the sponsor. The type of information on site characteristics needed to assess the potential for a CDF include the following (USACOE/EPA, 1992):

- Available area and volumetric storage capacity to contain the material for the required life of the site.
- Real estate considerations
- Site configuration and access
- Proximity to sensitive ecological environments
- Topography to include potential changes in elevation and runoff patterns and adjacent drainage.
- Ability of the dredge material to eventually dry and oxidize.
- Groundwater levels, flow and direction, and potential impact on groundwater discharge and recharge.
- Meteorology and climate.
- Foundation soil properties and stratigraphy
- Potential groundwater receptors
- Potential alteration of the existing habitat type
- Potential for effluent, leachate, and surface runoff affecting adjacent ground and surface water resources.
- Potential for direct uptake and movement of contaminants into food webs.
- Potential for volatilization of contaminants.
- Potential for dust, noise, or odor problems.
- Potential to implement management activities when deemed necessary
- Potential accessibility of the site by the public
- Contamination history of the proposed site.

Once the appropriate confined-disposal tests and site assessments are complete, a determination of environmental acceptability can be made. If control measures are needed, then determination of the effectiveness of the control measures in meeting the standards or criteria should also be made in a risk-

assessment framework. Once all these standards are met, then a CDF can be considered environmentally acceptable.

Confined Aquatic Disposal: Capping is the controlled placement of contaminated material at an open-water site followed by a covering or cap of clean isolating material. Because the long-term stability of the cap is of concern, capping is most technically feasible in low-energy, depositional disposal sites. When using borrow bit excavations with subsequent level-bottom capping, alternative placement methods (e.g., submerged discharge pipes or lateral containment methods) can be used to minimize water column impacts.

There is a wealth of information published on design considerations to insure successful capping projects (Shields & Montgomery, 1984; Truitt, 1986a, 1986b; Brannon et al., 1987; Sturgis & Gunnison, 1988; Bokuniewicz, 1989; Palermo, 1991a, 1991b, 1991c; SAIC, 1992, 1993; Fredette et al., 1992). To insure a successful capping design and implementation, several steps must be taken which can be divided into three general categories (SAIC, 1992): pre-project planning, disposal operations, and monitoring. Critical design considerations include (Shields & Montgomery, 1984):

- Dredge equipment selection
- Selection of capping site
- Placement method for contaminated material
- Method for transporting contaminated material to disposal site
- Selection of capping material
- Placement method for cap
- Dredge plant for obtaining cap material
- Method for transporting cap material to disposal site
- Method for navigation and positioning at disposal site
- Method for monitoring disposal site

An alternative for confined aquatic disposal that has been proposed in the literature periodically during the past two decades (Bascom, 1974; Pequegnat et al., 1978; Goldberg, 1981; Holloway, 1992; Edmond, 1992; Graham, 1993) but has not been evaluated adequately is deep ocean isolation or relocation. I know the committee has held hearings on this subject in the past, so I will not go into great details here. The arguments for evaluating this alternative are compelling, given the delivery system technologies available to eliminate water column effects entirely, the complete elimination of risk to groundwater contamination that does not exist with land-based alternatives, and the existence of hydrothermal rift vents spewing out toxic levels of sulphides and heavy metals demonstrating the existence of areas in the abyssal ocean that are isolated from surface waters and coastal and shelf food webs. It appears to be an

attractive alternative and worthy of further study via pilot program funding.

In general, when looking at confined disposal options for contaminated sediments, there is a considerable body of evidence to prove that leaving or disposing of contaminated sediment in a chemical environment as close as possible to their in situ state favors contaminant retention (especially metals). Geochemical changes associated with air and oxygen in upland and nearshore sites can change (reduce) sediment pH (mobilizing metals) and later (dissolve, degrade, or volatilize) sediment organic carbon (mobilizing organics). Based on this, many contaminants would tend to stay bound to sediment better in a confined aquatic disposal site (capped or deep ocean) than a nearshore or upland site. Metals will often go into solution and become mobile in oxidized, unsaturated sediment (e.g., in an upland site). Open-water sites, especially those in deep water, have fewer transport mechanisms than upland sites. Nearshore sites have the most transport routes available and are located in a very active environment; therefore, nearshore disposal may be the least preferred method for long-term confinement of contaminants because of significant management considerations. For open water disposal, the levels of contaminant concentration released will be low or negligible relative to nearshore or upland sites and will isolated by a cap or (in the deep ocean) diluted by the overlying water. The risk of significant damage in this environment is low and would not likely affect human health. For upland sites, environmental risks incurred may be higher than in open water because of the potential for ground water contamination and other human health concerns.

In summary, there are a host of problems facing those involved with or concerned about dredging, but none of them are insurmountable. On a regulatory level, there are often conflicting federal and state guidelines with no clear definition of evaluation criteria, leaving potential applicants trapped in what appears to be an endless maze with no clear road-map. From an applicant's perspective on both a federal and state level, there are "too many cooks" involved in the regulatory process; given this current administration's initiative to simplify federal bureaucracy, the dredging issue appears to a prime target of opportunity to eliminate the duplication of effort and put responsibility and guidance in one agency's hands so that clear, unambiguous guidelines can be established.

Finally, the biggest dredging problem facing society, coastal resource managers, and regulatory agencies today is how to deal most effectively with contaminated sediments. In addition to needing further research to determine clearer boundaries on the gray area of what makes a sediment

"contaminated" (i.e., causes unacceptable environmental or ecological impacts) and alternative approaches to environmental risk assessment so that we can make more accurate predictions of environmental health, we need to recognize that there is no one solution that will be the best approach for addressing the problem of dredging and contaminated sediment disposal. While stating that we should impose land-based sediment management controls to prevent erosion and thereby eliminate the need for dredging altogether or advocating zero discharge of all pollutants so that contaminated sediment will not be a problem in the future are both admirable goals, we need to recognize that until we ever reach these ideal conditions, we have to deal with the problems that are facing us now. Just as we need to continue to develop more cost-effective and technically feasible remediation technologies to treat what is truly hazardous waste, we need to continue to explore all options available for alternative disposal technologies.

Society needs to do something with its wastes, and the ocean is a logical place for some of them, just as we use the air and land for other waste streams. No single solution will be sensible for all kinds of waste or all locations; however, there is a clear need for additional public outreach and education so that people do not automatically assume that anything added to the ocean is necessarily harmful. We need to attack the problem of dredging and disposal of contaminated sediments on multiple fronts: a clear set of regulatory guidelines in a program headed by a single agency, source reduction to decrease the volume of sediments input to our harbors, continued efforts on a watershed basis to eliminate contaminant inputs to our nations waterways and nearshore coastal areas, and implementation of effective dredged material disposal management and monitoring programs to insure that we are handling the material in the most responsible manner and best stewardship possible.

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Respectfully submitted,

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STATEMENT OF

Beth Millemann
Executive Director
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BEFORE THE SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO, AND THE OUTER CONTINENTAL SHELF

COMMITTEE ON MERCHANT MARINE AND FISHERIES
UNITED STATES HOUSE OF REPRESENTATIVES

CONCERNING DREDGING ISSUES

June 14, 1994

Good morning. My name is Beth Millemann, and I am Executive Director of the Coast Alliance, a national coalition of coastal leaders dedicated to protecting and wisely managing the resources of the nation's four coasts: Atlantic, Gulf of Mexico, Pacific and Great Lakes. I would like to thank Chairman Ortiz for the opportunity to testify today.

I have been asked to provide testimony on the following:

* national dredging issues
* alternative technologies for dealing with contaminated dredge sediment
* alternatives for dredge sediment disposal

A. NATIONAL DREDGING ISSUES

The public is very concerned about dredging and disposal issues.

Dredging and disposal issues are of keen interest to many citizen and fishing interests across the United States. It is typically, though not exclusively, the case that public concern over dredging operations dramatically increases when the dredging involves known or suspected contaminated sediments. I believe that the major, though not only, dredging issue that concerns the public most is the issue of contaminated sediments.

I have first-hand experience with the extent of public interest in the dredging and disposal of contaminated sediments.

In 1991, the Coast Alliance joined with ***235 labor union, health, fishing and conservation groups*** in releasing a Citizens Charter on contaminated sediments that called for a series of actions to better protect the public's health and the nation's waters from exposure to contaminated sediments.

In 1992, these groups strongly supported amendments to the Water Resources Development Act (WRDA) that require the Environmental Protection Agency (EPA) to better manage the ocean disposal of dredged materials, and that established the decontamination project

in the New York-New Jersey Harbor.

Since May 1993, the Coast Alliance has been travelling around the country meeting with concerned citizens and holding a series of workshops on contaminated sediments. The workshops revealed the growth of interest in these issues over the years. Every coastal and Great Lakes state was represented by environmental leaders at the workshops. Strong representation by the commercial and recreational fishing industry also occurred. Private sector, and federal and state agency scientists, came to the workshops to share new data and to hear from other scientific and public health officials.

The message is clear: people around the country are worried about the impacts on human health, fisheries, water quality and wildlife from exposure to contaminated sediments. There is cause for concern. Human health problems have been documented from exposure to contaminants in underwater sediments. Entire fisheries are already threatened or at risk, as are various species of wildlife that feed on fish. And water quality problems are well known in areas in which contaminated sediments are present.

There is a clear pattern of public response to ocean pollution issues. Just one ocean pollution issue in the states represented by this subcommittee illustrates the point. In the 1980s, Waste Management, Inc, the largest waste handling firm on five continents, attempted to expand its ocean incineration activities from European waters to U.S. waters. It first tried to begin commercial ocean incineration of hazardous wastes at a site off Brownsville, Texas. But the company was driven out of the Gulf of Mexico when more than 6,000 enraged Texans attended the EPA's public hearing on the proposal, setting a new record for hearing attendance. Waste Management then tried to establish an ocean incineration site off New Jersey. It proposed that

incineration vessels load-up in Philadelphia and sail to a burn site off the Jersey shore. Hispanic and African American neighborhood leaders in Philadelphia packed the EPA public hearing on the proposal, at one point booing EPA officials off the stage. Commercial and recreational fishing groups threatened to block the incineration vessel to keep it from going to sea. Waste Management backed down, and put forward one last proposal: establishing an incineration site off California. The response there was equally vehement: the network of business leaders and conservationists that had successfully opposed various offshore oil drilling operations strongly opposed burning hazardous wastes in the Pacific ocean.

The result of this one ocean pollution issue that affected Texas, Pennsylvania, New Jersey and California is that ocean incineration is *now banned* in U.S. waters. When the public perceives a threat to the integrity of the oceans and the vast resources they support, the public doesn't call for better regulation or stricter permitting: the public calls for bans.

The public cares deeply about the dredging and disposal of contaminated sediments. There is enormous support among citizens, fishermen, public health officials and the scientific community for the commercial development of decontamination technologies as a way to avoid exposing humans or the environment to dangerous pollutants. Therefore, today's hearing is of great interest to not only the port community and the regulators, but also to citizens around the country who are becoming more and more concerned about threats to the oceans and Great Lakes from the disposal of dredged materials.

The extent of sediment contamination.

According to the EPA, it is likely that every major waterbody in the United States has

moderate to severe problems with sediment contamination.[1] The International Joint Commission (IJC) has identified serious contaminated sediment problems in 42 of 43 Areas of Concern in the Great Lakes and their tributaries.[2] Regarding the marine coasts, the National Oceanic and Atmospheric Administration (NOAA) testified in 1989 that their data, "reveal[s] the truly national extent of the problem of toxic contamination of sediment, fish and shellfish throughout the [marine] coastal waters of the United States."[3] After examining data from public agencies and private research centers, the National Research Council's Committee on Contaminated Marine Sediments concluded that, "sediment contamination is widespread throughout U.S. coastal waters and potentially far reaching in its environmental and public health significance."[4]

States are grappling with sediment contamination. In EPA's National Water Quality Inventory released in March 1994, 27 states discuss problems with toxic contamination of bottoms sediments, reporting 669 incidents of contamination caused primarily by heavy metals, PCBs, dioxin, and pesticides.[5] In fact, of all areas, NOAA concluded that the highest levels

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[1] Little, Arthur D., Inc. *An Overview of Sediment Quality in the United States, Final Report to Monitoring and Data Support Division, Office of Water Regulations and Standards, EPA.* USEPA: Washington, D.C. p. 21. June 1987.

[2] Sullivan, Jerry, and Bixby, Alicia, "A Citizens Guide: Cleaning Up Contaminated Sediment." Lake Michigan Federation: Chicago, IL. p. 4. 1989.

[3] Ehler, Charles N., Director, Office of Oceanography and Marine Assessment, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, "Statement before the Subcommittee on Superfund, Ocean and Water Protection and the Subcommittee on Environmental Protection, Committee on Environment and Public Works, United States Senate." p. 8. July 12, 1989.

[4] National Research Council, Committee on Contaminated Marine Sediments, Marine Board, Commission on Engineering and Technical Systems. *Contaminated Marine Sediments -- Assessment and Remediation.* National Academy Press: Washington, D.C. p. 1. 1989.

[5] CoastNet. Beaufort, S.C. p. 2. June 1, 1994.

of contamination for <u>any</u> pollutants were near the major harbors of Boston, New York, San Diego, Los Angeles and Seattle.[6]

Just a few examples of contaminated sediment sites in the states represented on this Committee include the following:

* ***San Diego Bay, CA.*** PCBs, tributyltin (TBT), DDT, PAH, heavy metals and organic chemicals have all been found in San Diego Bay sediments. There is a 13,000-fold increase in copper levels on the Bay bottom. In addition to these pollutants, aromatic hydrocarbons and pesticides are carried into the Bay from the 114 storm drains that empty into it.[7]

* ***New York/New Jersey Harbor.*** According to EPA, sediments in the New York/New Jersey Harbor are contaminated with a variety of chemicals, including mercury, cadmium, DDT, PCBs, petroleum hydrocarbons and dioxin. EPA has pinpointed major sources of contamination in the area, including municipal wastewater that includes a significant volume of untreated sewage, agricultural runoff, PCBs from extensive contamination of the Upper Hudson River, urban runoff, and atmospheric deposition.[8]

* ***Boston Harbor, MA.*** According to EPA, levels of contaminants such as polycyclic aromatic hydrocarbons (PAHs) in Boston Harbor sediments are among the highest reported for all coastal sites in the United States. Sediment contamination by PAHs and polychlorinated biphenyls (PCBs) has been associated with a high incidence of liver lesions in Boston Harbor winter flounder populations. These contaminants are listed in the current advisory on consumption of tomalley from lobsters. Sediments are probably the largest source of contaminants to the Boston Harbor water column.[9]

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[6] National Research Council, *op cit.*, p. 53.

[7] Heal the Bay, "San Diego Bay Toxic Hot Spots." Heal the Bay: Santa Monica, CA.

[8] PTI Environmental Services. *Workshop Proceedings: Toxic Sediments -- Approaches to Management.* (Prepared for the U.S. EPA.) EPA: Washington, D.C. pp. B-13 - B-17. September 1988.

[9] Environmental Protection Agency, "Contaminated Sediment News." EPA: Washington, D.C. pp. 2-3. May 1994.

__Threats to human health from foodchain contamination from sediments.__

The 1989 National Research Council report pointed to, "evidence that there may be substantial risk to the ecosystem and potentially to human health due to the contamination in marine sediments."[10] The threats to human health are diverse, according to the report: "in addition to the carcinogenic nature of many of these [sediment] contaminants, reproductive impairments and other sublethal effects in humans are concerns that require increased attention."[11]

One example of a widespread sediment contaminant that has been conclusively linked to human health problems is PCBs. Consumption of fish contaminated with PCBs from sediments has resulted in documented human health problems. According to a recent report entitled, "Clean Lakes, Clean Jobs:"

> Women who consumed two or three Great Lakes fish meals per month for at least six years prior to pregnancy had babies with lower birth weights, smaller head circumference, weaker reflexes and slower movements compared to unexposed infants. A follow-up study of the same group four years later revealed persistent detrimental effects on physical growth, verbal skills and short term memory.[12]

The source of PCB contamination in the above study of women who ate fish from Lake Michigan was clearly traced to releases from sediments in Lake Michigan. In fact, according to EPA's March 1994 report, "National Water Quality Inventory," contaminated sediments are

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[10] National Research Council, *op cit.*, p. 10.

[11] Ibid, p. 11.

[12] Sierra Club, "Clean Lakes, Clean Jobs." Sierra Club: Madison, WI. 1993. See also the discussion of this study in the 1989 National Research Council report, *Contaminated Marine Sediments -- Assessment and Remediation.*

one of the two leading sources of pollution impairing Great Lakes waters.[13]

There are many instances of PCB contamination of sediments around the United States.[14] This wide-spread pollutant is also one of hundreds of chemicals that resemble the human sex hormone, estrogen. These so-called "estrogen mimics":

> " . . . can trick the body into turning off, or racheting up, certain biochemical pathways -- especially those in the reproductive system. The result: sexual development, in both males and females, gone seriously askew."[15]

A Danish scientist reported in 1991 that sperm counts of men in the United States and 20 other countries dropped by an average of 50 percent since 1938; he believes that the culprit may be the presence of estrogen-like chemicals in pregnant and nursing women's blood and milk.[16] It is therefore no joke that a University of Florida researcher recently told a Congressional panel that, "every man in this room is half the man his grandfather was."[17]

B. ALTERNATIVE TECHNOLOGIES FOR DEALING WITH CONTAMINATED DREDGE SEDIMENT

The ARCS Program: Five Years Testing Technologies

Critical efforts to test technologies that isolate or reduce the toxicity of contaminated

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[13] Environmental Protection Agency, "The Quality of Our Nation's Water: 1992." EPA: Washington, D.C. p. 18. March 1994.

[14] For example, New Bedford Harbor, MA; New York-New Jersey Harbor; Mississippi Sound, Gulf of Mexico; San Francisco Bay, CA; Everett Harbor, Olympia, WA; Puget Sound, WA; and Ashtabula River and Harbor, OH.

[15] Newsweek, "The Estrogen Complex." Newsweek: New York. p. 76. March 21, 1994

[16] Ibid.

[17] Ibid.

sediments have been underway since 1987. The Assessment and Remediation of Contaminated Sediments (ARCS) program, a pilot project begun in the Great Lakes by EPA, has tested more than 10 technologies for the clean-up of contaminated sediment. The ARCS program received $5 million a year for five years of work on five sites. Coordinated through the Great Lakes National Program Office (GLNPO) of the U.S. EPA, the program has focused on the following sites: Saginaw, Michigan; Grand Cal, Indiana; Ashtabula River, Ohio; Buffalo River, New York; and Sheboygan, Wisconsin.

At the beginning of the program, EPA and the U.S. Army Corps of Engineers did a literature review of all decontamination technologies available. This included technologies developed through Superfund, hazardous waste, mining and sewage sludge programs, as well as different dredging techniques to minimize resuspension and to do area-specific dredging. Projects were expected to be conducted on three different scales:

* Bench scale -- a few cubic yards of sediment
* Pilot scale -- a few hundred cubic yards of sediment
* Full scale -- a few thousand cubic yards of sediment.

After five years of testing, GLNPO is finishing a remediation guidance document, which draws conclusions from the five ARCS site activities. The following is preliminary data as of February 1994 drawn from this guidance document. It is hoped that final data will be available this summer.

RESULTS OF THE ARCS TESTING PROGRAM

1. Saginaw, Michigan
Process: Sediment washing
Targeted Pollutants: PCBs and metals
Vendor: Bergman USA
Prognosis: This technology works well on sediments that area mixture of sand co-mingled with fine-grained materials. It only works on a mixture with a large volume of sand. It physically

separates fine-grained from coarse-grained materials and effectively reduces the volume of contaminated materials. It converts a large volume of mildly contaminated material to a small volume of highly contaminated material, which must then be further processed using another technique.

2. Grand Cal, Indiana
Process: BEST Chemical Extraction
Targeted Pollutants: PCBs and PAHs
Prognosis: It seemed to work more efficiently when the volume of mud increased; i.e., it worked better on a pilot scale than on a bench scale level. It successfully removed more than 98 percent of the total PCBs and PAHs.

3. & 4. Ashtabula River, Ohio, and Buffalo River, New York
Process: Low Temperature Thermal Desorption
Targeted Pollutants: PAHs, PCBs and hexachlorabenzene
Vendor: ReTec
Prognosis: Samples from the Buffalo River were done first and then samples from the Ashtabula. The results were better on Ashtabula muds than on Buffalo muds, but the difference could be due to more sophisticated techniques as the work progressed, or to fundamentally different sediments. The following removal rates were achieved on Ashtabula muds: 86% PCBs, 99% semi-volatile compounds (PAHs, organics), 92% volatile compounds.

5. Sheboygan, Wisconsin
Process: Bioremediation
Targeted Pollutants: PCBs
Prognosis: Fairly ineffective. The rate of breakdown of PCBs was extremely slow. Approximately 2,700 cubic yards of sediment were placed in a large metal box divided into four quadrants. Biological elements were added to each quadrant to break down the PCBs. This project was done in conjunction with the Superfund program.

It is suggested that most ARCS technologies would be applicable to marine sediments. Most of the principles of freshwater sediment decontamination should apply to saltwater decontamination. The ARCS program is now working with the Bureau of Mines to further explore technologies that could be used at low cost on large volumes of contaminated sediments.

Programs other than ARCS have been involved in developing and applying decontamination technologies. For example, the Superfund Innovative Technologies Evaluation (SITES) program has been involved in sediment decontamination efforts. (It is estimated that

one-third of the Superfund sites involve contaminated soils.) In addition, decontamination technologies are under review by Region 2 of the Army Corps of Engineers and EPA (New York-New Jersey District) in response to amendments to the 1992 Water Resources Development Act.

The environmental and fishing communities strongly feel that decontamination technologies offer a "door number three" approach to dilemmas over dredging. The options presented too often consist of only doors number one and two: either dredge whatever is proposed and dispose of it wherever the permit applicant wants, or alternatively, don't dredge at all and allow the harbors of America to silt in. Decontamination technologies are the rational door number three: submit contaminated sediments for treatment, safely dispose of the rest, and allow dredging to move forward.

C. ALTERNATIVES FOR DREDGE SEDIMENT DISPOSAL

Currently, roughly 400-450 million cubic yards of sediments are dredged annually from the nation's waterways. Of this amount, roughly 60 million cubic yards are dumped at approximately 100 ocean dumpsites.

Under the Marine Protection, Research and Sanctuaries Act (MPRSA, or the "Ocean Dumping Act"), material cannot be dumped in the ocean that will adversely affect municipal water supplies, shellfish beds, wildlife, fisheries or recreational areas. Indeed the MPRSA, enacted in 1972, begins with a "Congressional finding, policy and declaration of purpose" that states:

> "The Congress declares that it is the policy of the United States to regulate the dumping of all types of materials into ocean waters and to prevent or strictly limit

the dumping into ocean waters of any material which would adversely affect human health, welfare or amenities, or the marine environment, ecological systems, or economic potentialities."

Dumping contaminated sediments in the oceans clearly runs counter to the directive and purpose of the MPRSA. Major economies are threatened by contaminated sediment dumping, including the recreational and commercial fishing industries, which annually pump $13 billion into the nation's economy.

Human health is also threatened by contaminated sediment disposal in the oceans because of the exposure of fisheries to harmful chemicals and toxics in the muds.

The commercial development and application of decontamination technologies offer a "win-win" approach to dredging problems: dredging that is necessary can continue without threatening the aquatic environment or human health with exposure to dangerous contaminants.

D. RECOMMENDED ACTIONS

On behalf of the citizen groups around the country with which the Coast Alliance closely works, I would like to offer a few recommended actions for addressing problems that have occurred with contaminated sediments. Some of these actions require the passage of legislation; others require administrative activities or leadership.

1. ***Continue and expand the ARCS program.***

Provisions to continue and expand the ARCS program passed the Senate Environment and Public Works Committee as part of the Clean Water bill reported out by the Committee in February 1994. The Senate sponsors of the ARCS language include Sens. Metzenbaum, Glenn, Levin, Kohl, Feingold, Moseley-Braun, Simon and Riegle. Similar legislation has been

introduced in the House by Rep. Eric Fingerhut, H.R. 2565. The ARCS program must be continued and expanded. The environmental community strongly supports the enactment of the ARCS legislation.

2. *EPA should immediately release its Sediment Management Strategy for public comment.*

The Strategy has undergone extensive internal review and has been years in the drafting. Crucially important sediment activities are occurring daily within Congress, the Corps, MARAD, EPA itself, and increasingly, courts of law. It is high time that EPA released its own recommended framework for tackling sediment problems.

3. *The Maritime Administration (MARAD) proposals on sediments should recognize that dredging needs do not take precedence over the protection of human health and the environment.*

The recent initiative by the Maritime Administration to assess dredging issues must recognize that the Corps' and ports desire to dredge harbors does not outweigh the need to protect humans, commercial and recreational fisheries, endangered species, marine mammals and water quality from impacts from exposure to contaminated sediments.

4. *EPA should study its own Agency-wide Dioxin Reassessment prior to issuing proposed guidance for ocean-dumping dioxin contaminated sediments.*

For the past several years, EPA has been conducting an Agency-wide re-evaluation of the threats posed by dioxin to public and environmental health. Preliminary reports indicate that the Reassessment -- due out for public comment in July -- will indicate that dioxin is a significant threat to human health. The reassessment has been going on for years, involving private and public sector scientific review and input, and a careful assembly and analysis of data on dioxin. While the reassessment is finally to be released in July for, presumably, at least a 90-day public comment period, EPA Headquarters is simultaneously considering releasing

guidance to its regional offices regarding ocean dumping of dioxin contaminated muds. It makes no scientific or policy sense for an ocean dumping manual on dioxin to be released for public comment in the middle of a national public review and comment period on the comprehensive dioxin reassessment. EPA should avail itself of public comment, as well as avail itself of information contained in its own draft report, prior to releasing a guidance document for ocean dumping dioxin-laced muds.

Thank you for this opportunity to testify.

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103D CONGRESS
2D SESSION

H. R. 3821

To promote construction and operation of passenger vessels in the United States, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 9, 1994

Mrs. UNSOELD (for herself, Mr. STUDDS, Mr. LIPINSKI, Mr. DICKS, Mr. CANTWELL, Ms. DUNN, Mr. KRIEDLER, Mr. SWIFT, Mr. MANTON, Mr. BORSKI, Mr. HOYER, Mr. CUNNINGHAM, and Mr. JOHNSON of South Dakota) introduced the following bill; which was referred jointly to the Committees on Merchant Marine and Fisheries and Natural Resources

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A BILL

To promote construction and operation of passenger vessels in the United States, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "United States Passenger Vessel Development Act".

SEC. 2. PURPOSE.

The purpose of this Act is to promote construction and operation of United States flag passenger vessels in the United States.

SEC. 3. INTERIM COASTWISE PASSENGER TRADE ENDORSEMENT.

(a) ENDORSEMENT AUTHORIZED.—Chapter 121 of title 46, United States Code, is amended by inserting after section 12112 the following new section:

"§ 12113. Interim coastwise passenger trade endorsement

"(a) Before December 31, 2000, a certificate of documentation for a passenger vessel may be endorsed with an interim coastwise passenger trade endorsement, if the vessel is—

"(1) eligible for documentation under section 12102;

"(2) owned by, or demise chartered for at least 18 months to, a citizen of the United States for purposes of issuing a certificate of documentation with an interim coastwise passenger trade endorsement under section 2(e) of the Shipping Act, 1916 (46 App. U.S.C. 802(e));

"(3) at least 250 gross tons (as measured under chapter 143 of this title) and has at least 175 berths; and

"(4) not a ferry.

"(b) As a condition of issuing an interim coastwise passenger trade endorsement for a vessel, the Secretary shall require the owner or charterer of the vessel to enter

into one or more contracts for the construction in the United States of one or more vessels having a total berthing capacity that is at least 80 percent of the capacity of the vessel for which the endorsement is issued.

"(c) A vessel with a certificate of documentation with an interim coastwise passenger trade endorsement may be employed in the coastwise trade in the carriage of passengers.

"(d) On termination of a demise charter required under subsection (a)(2)(B) for a vessel, an interim coastwise passenger trade endorsement for the vessel may be continued for a period not to exceed 6 months on any terms and conditions that the Secretary of Transportation may prescribe.

"(e)(1) An interim coastwise passenger trade endorsement issued for a vessel under subsection (a) expires—

"(A) on the date that is 12 months after the date of issuance of the endorsement, if the owner or demise charter of the vessel fails to submit to the Secretary before the end of that 12-month period a letter that—

"(i) states the interest of the owner or demise charter, respectively, and a representative of a shipyard in the United States to enter into

a contract for the construction in the shipyard of at least one passenger vessel that has a total berthing capacity that is at least equivalent to 80 percent of the berthing capacity of the vessel for which the endorsement is issued; and

"(ii) is signed by the owner or demise charterer, respectively, and the representative;

"(B) on the date that is 24 months after the date of issuance of the endorsement, if the owner or demise charterer of the vessel does not enter into a contract before the end of that 24-month period for the construction in the United States of one or more passenger vessels described in subparagraph (A)(i);

"(C) on the date that is 3 years after the date of issuance of the endorsement, if construction of such a vessel under the contract is not begun before the end of that 3-year period; and

"(D) on the date that is 180 days after the date of delivery of a vessel for which construction is completed pursuant to the contract.

"(2) The Secretary may extend the period applicable under paragraph (1)(B) or (C), or both, for not more than 6 months.

"(f) An interim coastwise passenger trade endorsement for a vessel shall prohibit the operation of the vessel

in any trade that is served by another passenger vessel of at least 250 gross tons and having at least 175 berths that is documented under section 12106 of this title, unless the owner or charterer of the vessel so operated is also the owner of the other vessel having the endorsement.

"(g) Except as provided in this section, section 2113(b) of this title, or section 2(e) or 9(e) of the Shipping Act, 1916, a vessel with an interim coastwise passenger trade endorsement shall comply with all requirements applicable to a comparable passenger vessel that is otherwise documented under the laws of the United States.".

(b) CLERICAL AMENDMENT.—The table of sections at the beginning of chapter 121 of title 46, United States Code, is amended by inserting after the item relating to section 12112 the following:

"12113. Interim coastwise trade endorsement.".

(c) NOTICE TO SECRETARY OF REFLAGGING.—Section 9 of the Shipping Act, 1916 (46 App. U.S.C. 808) is amended—

(1) in subsection (c) by inserting "subsection (e)," after "Except as provided in"; and

(2) by adding at the end the following:

"(e) Notwithstanding subsection (c), a person may place under a foreign registry or operate under the authority of a foreign country, without approval of the Secretary

of Transportation, any vessel with an interim coastwise passenger trade endorsement under section 12113 of title 46, United States Code, if the person notifies the Secretary of that action—

"(1) before the 60-day period ending on the date that action is taken; and

"(2) within 12 months after—

"(A) the issuance of the interim coastwise passenger trade endorsement, or

"(B) the beginning of construction of the replacement vessels required for that issuance under section 12113 of title 46, United States Code.".

SEC. 4. SOLAS CONSTRUCTION STANDARDS.

Section 2113 of title 46, United States Code, is amended—

(1) by inserting "(a)" before "If"; and

(2) by adding at the end the following new subsection:

"(b) A documented vessel with an interim coastwise passenger trade endorsement—

"(1) is deemed to comply with parts B, C, and J of this title if the vessel meets the standards for passenger vessel construction for safety of life at sea issued under the International Maritime Organiza-

tion convention to which the United States is a party; and

"(2) shall be issued by the Secretary the appropriate inspection, load line, and tonnage certificates if that vessel meets those standards.".

SEC. 5. CITIZENSHIP FOR PURPOSES OF DOCUMENTATION.

Section 2 of the Shipping Act, 1916 (46 App. U.S.C. 802), is amended by adding at the end the following:

"(e) For purposes of issuing a certificate of documentation with an interim coastwise passenger trade endorsement or a coastwise endorsement for transporting passengers in the coastwise trade under chapter 121 of title 46, United States Code, the controlling interest in a corporation is deemed to be owned or demise chartered by citizens of the United States if at least 51 percent of its stock is vested in citizens of the United States free from any trust or fiduciary obligation in favor of any person not a citizen of the United States.".

SEC. 6. AMENDMENT TO TITLE XI OF THE MERCHANT MARINE ACT, 1936.

Section 1101(b) of the Merchant Marine Act, 1936 (46 App. U.S.C. 1271(b)) is amended by striking "passenger cargo" and inserting "passenger, cargo,".

SEC. 7. PERMITS FOR VESSELS ENTERING UNITS OF NATIONAL PARK SYSTEM.

(a) PRIORITY.—Notwithstanding any other provision of law, the Secretary of Commerce may not permit a person to operate a vessel in any unit of the National Park System except in accordance with the following priority:

(1) First, any person that will operate a vessel that is documented under the laws of, and the home port of which is located in, the United States.

(2) Second, any person that will operate a vessel—

(A) that is documented under the laws of a foreign country, and

(B) which on the date of the enactment of this Act is permitted to be so operated.

(3) Third, any person that will operate a vessel other than a vessel described in paragraph (1) or (2).

(b) REVOCATION OF PERMITS FOR FOREIGN-DOCUMENTED VESSELS.—The Secretary of Commerce shall revoke permission granted by the Secretary for the operation of a vessel documented under the laws of a foreign country in a unit of the National Park System, if—

(1) a person requests permission to operate a vessel documented under the laws of the United States in that unit;

(2) the permission may not be granted because of a limit on the number of permits that may be issued for that operation.

Getting Some Answers On a Potential Killer

EPA Report to Detail Risks From Dioxin

By Gary Lee
Washington Post Staff Writer

Ever since Vietnam War veterans began complaining of problems from headaches to lung cancer after exposure to dioxin-laden Agent Orange, researchers have raised a firestorm of questions about the chemical's effects. Now they think they have some answers.

An Environmental Protection Agency study, due out next month, concludes that dioxin provokes severe health problems in humans, even at very low doses. According to a draft of the report, it can cause increased risk of cancer, damage to reproductive functions, stunted fetal growth and weakened immune systems. Dioxin and related compounds, the EPA estimates, are responsible for between 1 in 1,000 and 1 in 10,000 of all cancers, and many adverse effects occur at exposure levels very near the general population average in industrialized countries.

Scientists have known for decades that high exposure to dioxin gives people chloracne, a severe skin rash. And they have long suspected the compound—which is produced by various industrial processes—of being a human carcinogen, though conclusive data are still lacking. But evidence of dioxin's probable role in altering immune, reproductive and postnatal functions is new, resulting from recent laboratory advances in fetal development studies and immunology.

Effects on Animal Cells

The EPA's first report on dioxin, in 1985, concluded that the chemical was a potential carcinogen. The agency began to revise its position in 1989, but demurred when the attempt prompted a nationwide scientific controversy over the degree of risk and the shortage of epidemiologic data.

For the new reassessment, EPA researchers base their conclusions on the way dioxin is believed to act inside animal cells. The crucial first step is the binding of the dioxin molecule with a receptor called Ah. The dioxin-receptor pair then attaches to another protein, and the combination moves to the nucleus, where it activates transcription of certain genes that direct the synthesis of various proteins. The proteins in turn trigger changes in the cell and can eventually provoke a range of biological reactions, probably including cancer. In addition, the dioxin-receptor combination may prompt transcription errors in the DNA, leading to mutations.

Opening the Door

Lynn Goldman, an assistant EPA administrator overseeing the reassessment, compares the binding of dioxin and receptor molecules to a key fitting into a lock—after which "a door is opened to various forms of disease."

Extensive experiments on animals demonstrate what can lie beyond that door—and how complicated the compound's effects are. Guinea pigs die after ingesting one-millionth of a gram per kilogram of body weight—thousands of times smaller than a lethal dose of arsenic—but hamsters live when exposed to much larger amounts. And although dioxin causes many kinds of cancer in animals, it inhibits the formation of others, such as skin cancer in mice.

Goldman and others stress, however, that although research has shown wide variation among species, dioxin affects the organs in all species in roughly the same way. Moreover, they argue, the basic cellular mechanisms are sufficiently similar across all species that what occurs in lab animals must be assumed to occur in humans.

The most extensive tests have been conducted on rats. The immune systems of some were severely weakened because of depletion of lymphoid tissues. The reproductive systems of others were damaged, marked by abnormal growth of sexual organs and reduced fertility. (Some analysts think exposure to dioxin may already be showing up in

cont.

Getting Some Answers On a Potential Killer

EPA Report to Detail Risks From Dioxin (continued)

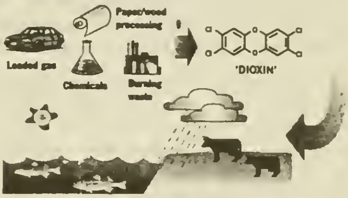
EVERYDAY EXPOSURE TO DIOXINS

The term "dioxin" applies to dozens of members of a class of synthetic compounds, but is usually used to refer to the single most studied of these substances: 2,3,7,8 tetrachlorodibenzo-p-dioxin, which first came to national attention when it was found to be a contaminant in the defoliant Agent Orange.

Dioxin is not deliberately manufactured, but occurs as the byproduct of many processes, including waste incineration, chemical manufacture, wood pulp and paper treatment and other industrial practices.

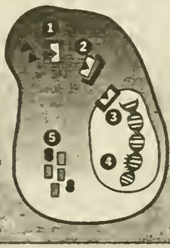
In industrialized countries, virtually everyone has been exposed to some level of dioxin, which usually enters the environment in airborne form or as solid waste and can persist for decades in soil and sediments.

Dioxin is not easily water soluble, and accumulates in fatty tissues. Once in the food chain, it is passed on to people in meat, milk and seafood. It takes the human body about six years to eliminate one-half of its total load.

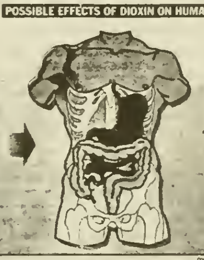


HOW DIOXIN AFFECTS CELLS

1. When dioxin enters a cell, it binds to a protein called the Ah receptor, which is present in human liver, lung, lymph and placental tissue.
2. The dioxin-receptor pair then interacts with another protein called ARNT.
3. The cluster of dioxin and two proteins binds to DNA in the cell nucleus, activating the expression of several genes, which in turn direct the production of various proteins.
4. The cluster may cause genetic changes or DNA transcription errors that can result in cancer or tissue proliferation.
5. The proteins created via the dioxin-activated genes are believed to influence hormone metabolism and growth factors, thus affecting reproduction and the immune system.



POSSIBLE EFFECTS OF DIOXIN ON HUMANS:



- Increased risk of lung, liver and other cancers, including soft-tissue sarcomas.
- Reproductive dysfunction, including altered levels of circulating sex hormones
- Developmental problems in fetuses and newborns
- Impairment of immune function, via depleted lymph tissues and possibly endocrine system disruption

SOURCES: Environmental Protection Agency

BY JOHN ANDERSON—THE WASHINGTON POST

the form of reduced sperm count in human males and declining fertility in females.) Fetal growth in some female rats was stunted. Others showed a hormonal imbalance, with effects similar to those occurring with increased levels of estrogen.

Human data are less conclusive, in part because of the dearth of cases of high levels of exposure. Several studies nonetheless seem to indicate severe toxicity. For instance, a 1991 analysis sponsored by the National Institute of Occupational Safety and Health of more than 5,000 U.S. workers exposed to dioxin on the job showed an increase in incidence of lung cancer and soft tissue sarcoma. Among participants exposed for more than two years and observed two decades or more later, the overall cancer rate was nearly 50 percent higher than in the general population.

A Linear Model

The EPA calculates the potential risk of exposure at low doses by extrapolating known results of higher exposures using a linear model. That is, if 1,000 rats are given a dose of dioxin and 500 develop cancer, then 250 will get cancer from half the dose, 125 from one-quarter, and so on. (However, because of subtle variations in cell protein and receptor structure, effects may differ widely from one individual to another, and males will be affected differently from females.)

In its 1985 assessment, the EPA estimated that the maximum amount that a person can ingest over a lifetime without getting sick is 0.006 picograms per kilogram of body weight per day. (A picogram is a trillionth of a gram.) But the draft reassessment concludes that the average American is currently exposed to 0.3 to 0.6 picograms per kilogram per day of dioxin and related compounds and that some groups of the population are significantly overexposed.

Collecting in fatty tissues, dioxin is most often consumed in beef, dairy products and fish. Infants also ingest it through breast feeding. Mother's milk, some specialists contend, can account for more than a quarter of person's lifetime intake.

The EPA report, which has taken three years to complete and is now undergoing final review by teams of researchers, is unlikely to end the debate about dioxin. Already, government and outside analysts are raising questions about the draft report's conclusions.

Evidence Seen Lacking

Some critics are skeptical about the EPA's method of calculating the possible effects of low-level dioxin exposure. The conclusion in the report that a small dose can cause human cancer is not supported by clinical evidence, said Michael Gough, a dioxin expert with the congressional Office of Technology Assessment. "There [are] no hard data to support assertions that the chemical poses any significant health risks besides chloracne," he said.

Others doubt the EPA's objectivity. The agency "appears to base its conclusions no studies that are incomplete or inconclusive," said Susan Ellen Pirages, an analyst hired by the Chemical Manufacturer's Association to review the EPA's work. "More work needs to be done before decisions are made about this chemical."

When the EPA issues the report, a fight is likely over whether dioxin emissions should be further regulated. Some analysts, citing the overall decline in the presence of dioxin in Americans over the past 15 years, oppose further controls. Two major dioxin sources—leaded gasoline and one of the two herbicides in Agent Orange—are no longer used in the United States, and many industries, including paper manufacturers, say that newly developed technologies will dramatically reduce emissions.

In an analysis conducted on randomly selected young American males in the mid-1970s, the Environmental Protection Agency found that the average concentration of dioxin was between 10.9 and 12.4 parts per trillion of blood lipid. In a similar study in the 1980s, the Centers For Disease Control found the average level had fallen to 4 ppt.

But many contend that the drop has leveled out, and a movement to impose stringent restrictions on emissions of dioxins is already afoot. "We know that it has negative effects on human health and that some population groups are overexposed to it," said Ellen K. Silbergeld, a staff scientist at the Environmental Defense Fund. "Something should be done to protect them."

INSERT

SUBJECT: Army Corps of Engineers Research and Development (R&D) Efforts Specifically Related to Treatment Technologies

1. Enclosure 1 provides, in part, an historical summary of Corps involvement to date with the subject treatment technology research within the U.S. This summary is thought to also represent the vast majority of U.S./Canadian R&D conducted to date on this subject. Enclosure 1 also includes pertinent references for further information.

2. The Corps and other agencies have expended approximately $18 million on this specific research topic area since 1973. The Corps investment has been $5 million out of the roughly $100 million total R&D investment the Corps has made during this period on dredged material research. The primary reason for this level of expenditure has been the very high costs for contaminated sediment treatment applications which we have encountered. Treatment technologies have simply not proven to be an economically viable option for maintaining Federal navigation as the costs far outweigh the benefits. R&D of other agencies has shown generally the same results. High costs can be justified only when impacts are extensive, such as for Superfund sites.

3. The majority of Corps-conducted R&D in this area to date has been undertaken for other Federal agencies; primarily for the Environmental Protection Agency under Superfund and related clean-up funding authorities, and for the Department of Defense, under its existing clean-up authorities. Enclosure 2 provides a brief summary of the state-of-the-practice and typical costs by category of contaminated sediment treatment technology as follows:

- Incineration
- Chemical Extraction
- Bioremediation
- Thermal Desorption
- Physical Separation

STATUS OF RESEARCH AND DEVELOPMENT FOR
SEDIMENT TREATMENT TECHNOLOGIES

Corps of Engineers Dredged Material Research Program (1973-1978, $2,500K*)

- Laboratory studies conducted to determine the amenability of contaminated dredged material to treatment by physical or chemical processes. Conventional treatment techniques found not applicable or impractical due to the relatively high solids content, low organic content, high flow rates, and variable nature of dredged material slurry.

- Chemical flocculation and vegetated filters improved effluent quality for confined disposal facility effluents.

- Most technologies applied to the treatment of dredged material require temporary storage in a confined disposal facility to equalize dredge flows and to pretreat or dewater the material. Settling and consolidation processes, dewatering techniques, filtration technologies, particle separation technologies,and effluent control measures investigated by this program have application to treatment trains for contaminated sediments.

Field Verification Program (1981-1987, $300K*)

- Compared placement of contaminated dredged material in wetland and upland environments to aquatic disposal. Contaminant losses evaluated for each alternative. Soil @amendments and tolerant plant species added to upland site to stabilize the surface layer and minimize contaminant mobility.

Alternatives for PCB-Contaminated Sediments from Indiana Harbor, Indiana (1984-1987, $600K*)

- Investigated appropriate restrictions, including effluent treatment technologies and leachate controls, for disposal of this highly contaminated sediment. Included evaluation of solidification/stabilization of dredged material to minimize contaminant mobility in disposal areas.

Engineering Feasibility Study, New Bedford Harbor Superfund Site, Massachusetts (1985-1989, $700K*)

- Investigated solidification/stabilization technologies and effluent treatment technologies for containment of PCB sediments. Additional treatment technologies investigated by U.S. Environmental Protection Agency (USEPA).

Enclosure 1

Water Resources Development Act (WRDA) of 1990, Section 412(c), Options for Treatment and Disposal of Contaminated Sediments from New York/New Jersey Harbor (1991-1994, $350K)

- o Available technologies for treatment of dioxin-contaminated sediment reviewed.
- o Bench-scale evaluations for four treatment technologies performed. Solvent extraction, incineration, and base-catalyzed destruction were effective in removing or destroying dioxins in the sediment.
- o Alternatives developed for six treatment technologies and three disposal alternatives and compared on the basis of effectiveness, implementability and costs.

Assessment and Remediation of Contaminated Sediments (ARCS) Program, (1988-1993, $8,000K*)

- o Administered by the U.S. Environmental Protection Agency Great Lakes National Program Office with technical support from the Corps of Engineers. Focused on five areas of concern (AOC) on the Great Lakes.
- o Most comprehensive evaluation of sediment treatment technologies conducted in the U.S.
- o ARCS Engineering Technology Work Group reviewed available treatment technologies for contaminated sediment and tested the more promising technologies on bench-scale and performed pilot-scale field demonstrations for each AOC.
- o Demonstrated physical separation, thermal desorption, solvent extraction, biotreatment, and solidification technologies.

Other Sediment Treatment Research In-Progress

- o USEPA/Corps of Engineers sediment decontamination project sponsored by WRDA 1992, Section 405, for Port of New York/ New Jersey.
- o Environment Canada Contaminated Sediment Treatment Technology Program (1990-1994, $6,000K)
- o U.S. Navy Contaminated Sediment Research.
- o Superfund Site investigations for a number of sites across the country.
- o Industry sponsored research, particularly for PCB-contaminated sediments.

Enclosure 1 (Cont.)

Sediment Treatment Costs

- See Enclosure 2 for cost range for selected treatment alternatives.

- Cost estimates have high degree of uncertainty because of the lack of implementation of such projects on a full scale.

Superfund Sites Applying Sediment Treatment Technologies

- Outboard Marine Corporation Site, Waukegan, IL. Thermal desorption treated about 10,000 cu yd of PCB-contaminated sediment at a cost of approximately $300/cu yd.

- Marathon Battery Site, Cold Springs, NY. Dewatering and chemical stabilization treating over 100,000 cu yd of heavy metal contaminated sediment at a treatment cost of approximately $40/cu yd plus an additional transportation and disposal cost of approximately $40/cu yd.

- Bayou Bonfouca Site, LA. Incineration treating 170,000 cu yd of PAH-contaminated sediment at a cost of approximately $700/cu yd.

* Funding indicated in parentheses indicates program funding associated with treatment or restricted disposal options.

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TREATMENT TECHNOLOGIES
FACT SHEET

INCINERATION

TECHNOLOGY DESCRIPTION

Incineration is the process of heating contaminated materials to temperatures generally in excess 1200°F in the presence of air to combust or burn organic materials, including contaminants. Waste materials are fed to a primary combustion chamber for heating, combustion, and volatilization of organic compounds. Gases from the primary combustion chamber pass to an afterburner, where increased temperatures oxidize residual organics. Air pollution control processes such as scrubbers follow the combustion process to remove potential air pollutants. Organic compounds are transformed to inorganic ash, carbon dioxide and water. Most metals remain with the ash. A number of process options are commercially available. The most common option is the rotary kiln incinerator. Other options are fluidized bed and infrared incineration.

STATE OF DEVELOPMENT

Incineration is a proven technology for decontamination of soils contaminated with dioxins, PCBs, and other organic contaminants. It has been used to cleanup a dioxin site in Missouri and to destroy dioxins in military wastes at a naval base in Gulfport, Mississippi. It was selected for remediation of hot spot sediments at New Bedford Harbor Superfund Site, Massachusetts, and for sediments at the Bayou Bonfouca Superfund Site, Louisiana. USEPA has tested on a bench or pilot scale a number of contaminated sediments, including a pilot test for New Bedford sediment and a bench test for New York/New Jersey sediment, at its Incineration Research Facility. Incineration of sediments from the Bayou Bonfouca Superfund Site is currently underway.

EFFECTIVENESS

Incineration has demonstrated destruction and removal efficiencies greater than 99.9999 percent during pilot and full scale evaluations. Recent bench scale tests of incineration for New York/New Jersey Harbor sediment reduced total dioxin levels in the sediment from approximately 200 pg/g to less than 2 pg/g. The New Bedford pilot test demonstrated a reduction of 99.7 percent of a feed PCB concentration of 45,000 mg/kg for New Bedford sediment.

IMPLEMENTABILITY

Implementation of incineration technology for contaminated sediments is technically feasible Pre-treatment would be required to remove oversized solids, and a dewatering step would increase thermal efficiency. Primary obstacles to implementation are regulatory requirements and acceptability by the public. Public opposition has suspended use of incineration for the New Bedford Hot Spot.

COSTS

Cost estimates for removal and incineration of contaminated sediments from New York/New Jersey Harbors are approximately $1300 per cu yd.

TREATMENT TECHNOLOGIES
FACT SHEET

EXTRACTION

TECHNOLOGY DESCRIPTION

Extraction technologies remove contaminants from sediment by separating the contaminant from the sediment particles and/or dissolving the contaminant in a solvent. Extraction does not change or destroy the contaminant; instead the contaminant is usually concentrated by the process into a small volume which must receive subsequent treatment. For extraction processes to be economical, the solvent must be easily separated from the soil and from the contaminant for recycle to the extraction step. Because of the tight bond between sediment particles and contaminants, multiple extraction stages are usually necessary to achieve high removal efficiencies. Water is not an effect solvent for removing contaminants from fine-grained sediments, but surfactants or detergents can improve the effectiveness of soil washing processes using water. Extraction processes aimed at organic contaminants usually use an organic solvent. Three process options have been reported for removal of organic contaminants from sediment. The B.E.S.T.® process marketed by Resources Conservation Company uses a combination of tertiary amines, usually triethylamine, pH adjustment, and temperature adjustments to remove the contaminants from the sediment and subsequently separate and reclaim the solvent. The C.F. System Corporation process uses liquified propane as the solvent, which is mixed with the sediment under high pressure. After separating the liquid propane from the solids, the pressure is released to reclaim the propane for subsequent extraction stages. The third extraction process marketed by ART International, Inc., uses common solvents such as acetone and kerosene, to remove organic contaminants.

STATE OF DEVELOPMENT

The B.E.S.T.® process has been demonstrated on a full scale (70 tons per day) at the General Refining Superfund site in Garden City, Georgia, and was demonstrated at pilot scale for the ARCS program and for the USEPA SITE program in the treatment of contaminated sediment from Indiana Harbor. Bench-scale evaluations of the B.E.S.T.® process were also completed for three Great Lakes sediments under the ARCS program. The CF System process was demonstrated at pilot scale for PCB removal from contaminated sediment at the New Bedford Harbor Superfund Site as a SITE demonstration. The ART process has been tested for sediments in the laboratory. Bench-scale tests have also been performed for dioxin removal from New York/New Jersey sediment.

EFFECTIVENESS

Laboratory evaluations of the B.E.S.T.® process have shown removals of PCBs from sediments between 96 and 99.9 percent. The CF System process achieved 90 to 98 percent removal efficiencies for PCBs at the New Bedford pilot demonstration.

IMPLEMENTABILITY

Extraction processes can possibly be implemented for relatively small volume sediment remediation projects. There are few commercial units available, and the processes are proprietary. The pilot scale units demonstrated for sediments are batch processes leaving unanswered questions concerning full scale implementation. Materials handling problems have been noted for some of the pilot-scale evaluations.

COSTS

Costs for extraction processes range from $100 to $500 per ton. Most cost data is based on vendor estimates rather than case studies of full-scale cleanup projects.

TREATMENT TECHNOLOGIES
FACT SHEET

BIOREMEDIATION

TECHNOLOGY DESCRIPTION

Biological treatment of organic contaminants in sediment involves the cultivation of native organisms in the sediment or the addition specially cultivated microorganisms. Environmental conditions, including temperature, moisture, oxygen content, pH, and organic/nutrient content, must be carefully controlled to stimulate the microbial metabolism necessary to degrade the contaminants. Conditions can be carefully controlled in a bio-slurry reactor, but optimization of conditions for in situ bioreclamation is a subject of considerable research. Biodegradation of chlorinated compounds has been shown to require stepwise treatment using anaerobic bacteria to reduce the level of chlorination followed by aerobic decomposition for the lower chlorinated compounds. Ideally, biotreatment will completely mineralize organic contaminants to carbon dioxide and water. Two of the problems associated with biodegradation of organic contaminants in sediment are getting the microorganisms in contact with the contaminant which is tightly bound to the sediment particle and encouraging the microorganisms to feed on the contaminant which is available in relatively low concentrations rather than the much higher concentration of more easily degradable organic matter in sediments.

STATE OF DEVELOPMENT

Bioremediation has been investigated in laboratory and field evaluations for a number of contaminated sites including some sediment sites. USEPA reported in 1991 that more than 15 CERCLA/RCRA/UST sites were evaluating bioremediation as a remediation alternative. However, few if any sediment sites have been cleaned up using bioremediation. Notable field studies include in situ pilot evaluations by General Electric for Hudson River sediments and a contained treatment facility for sediments from the Sheybogan River. The Sheybogan study has been underway for more than one year, but final results have not yet been reported. The test cells can be controlled to add nutrients or oxygen and various modifications to process operation are being evaluated. The ARCS program is participating in the Sheybogan study, as well as conducting bench scale studies for Sheybogan River and Ashtabula Harbor sediments.

EFFECTIVENESS

Bioremediation is very dependent on the sediment and contaminant characteristics and effectiveness for a particular site can only be predicted based on laboratory and field evaluations. Few studies reported in the open literature have shown efficiencies greater than 90 percent removal for the chlorinated organics, although some vendors claim higher removal efficiencies..

IMPLEMENTABILITY

Bio-slurry reactor treatment is an available technology, and it has been implemented on a limited scale for contaminated soil treatment. However, processing rates have been relatively low (<20 tons per hour). In situ biotreatment will be difficult to implement for many contaminated sediment sites because of hydraulic conditions, water depths, and other uncontrollable variables in a waterway, and because of physical limitations on techniques and equipment needed to alter sediment chemistry in order to accelerate biodegradation.

COSTS

Costs reported for biotreatment range from $50 to $600 per cu yd. Site conditions, required amendments to the sediment, and the retention time required for treatment, which are highly variable, have a major influence on cost of treatment.

TREATMENT TECHNOLOGIES
FACT SHEET

THERMAL DESORPTION

TECHNOLOGY DESCRIPTION

Thermal desorption is similar to solvent extraction processes in that contaminants in sediment are removed, but not destroyed. Separation of contaminants is effected by heating the sediment to temperatures ranging from 200 to 1,000 °F to remove volatile and some semi-volatile organic contaminants. Water and organic contaminants are vaporized by the heating process and subsequently burned in an afterburner, condensed and collected as liquid, and/or captured on activated carbon. An inert atmosphere is usually maintained in the heating step to minimize oxidation of organics. Heating may be accomplished by indirectly fired rotary kilns, screw auger driers, a series of externally heated distillation chambers, or fluidized beds. A number of process options are available for this technology.

STATE OF DEVELOPMENT

Thermal desorption has been demonstrated for contaminated sediments at bench, pilot, and full scale. The ARCS program evaluated ReTec's heated auger system for two sediments on a bench and pilot scale. Soil Tech's Anaerobic Thermal Processor was evaluated by the ARCS program on the bench scale, was used for the full scale treatment of sediment from Waukegan Harbor, and was evaluated as a SITE demonstration for Waukegan Harbor. The Soil Tech unit had a processing rate of approximately 10 tons per hour, but a 25 tons per hour unit is reported to be available.

EFFECTIVENESS

Removal efficiencies for most organic contaminants in bench and pilot scale evaluations have been greater than 90 percent. The Soil Tech treatment of Waukegan sediments reduced PCB concentrations from an average of 10,000 ppm in the feed to less than 2 ppm in the treated sediment.

IMPLEMENTABILITY

Thermal desorption processes can be implemented for remediation of hot spot sediments. The high moisture content of sediment increases the cost for operating these thermal systems. Oversize material would generally have to be removed as a pretreatment step. Most processes are proprietary, but the relatively large number of vendors in this market allow for competitive bidding.

COSTS

Reported costs for these technologies range from $80 to $350 per ton. Treatment of 12,700 tons of Waukegan sediment costs approximately $300 per ton.

TREATMENT TECHNOLOGIES
FACT SHEET

PHYSICAL SEPARATION

TECHNOLOGY DESCRIPTION

Physical separation includes a number of process options which have been used extensively in the mineral processing industry. Physical separation is a method of reducing the volume of contaminated material that requires extraordinary treatment or disposal by separating the coarser, less contaminated, particles from the finer, more contaminated sediment particles. The separation process may be accomplished by gravitational forces, by particle geometry, or by particle charge. Gravitational separation can be accomplished by settling, tabling, flotation, spiral classifiiers, or hydrocyclones. Size separation commonly involves some type of screening. Magnetic and electrostatic separation processes take advantage of particle chemistry.

STATE OF DEVELOPMENT

All of these processes have been demonstrated for industrial applications, and most have been evaluated for contaminated sediment. The U.S. Bureau of Mines has investigated most of these processes in the laboratory for contaminated sediments from the Great Lakes under the USEPA Assessment and Remediation of Contaminated Sediment (ARCS) program. The ARCS program also demonstrated physical separation techniques during for Saginaw River sediments contaminated with PCBs. This demonstration included hydrocyclones, screens, attrition scrubbers, and density media separators. Physical separation has also been demonstrated by Canada's Great Lakes Contaminated Sediment Treatment Technology Program at the Welland River and Toronto Harbor. Screens, spiral classifiers, centrifuges, hydrocyclones, and soil washing techniques were evaluated. Physical separation processes have also been used in the Netherlands to separate clean sands from more contaminated silts and clays.

EFFECTIVENESS

The effectiveness of physical separation processes depends greatly on the particle characteristics and the grain-size distribution of the sediment. If the sediment is predominantly silts and clays physical separation may have little value as a volume reduction technique. Separation efficiency must be evaluated on a case-by-case basis. Multiple hydrocyclone stages and screening steps may be necessary to improve efficiency. The coarser fraction is not always clean following separation and may require soil washing techniques and the addition of surfactants. Often, an oversize organic fraction, which can be separated by screening, can have a high contaminant concentration.

IMPLEMENTABILITY

Physical separation processes are relatively easy to implement for dredging projects. The equipment is widely available from a number of manufacturers at sizes that could accommodate large dredging projects. The equipment required is small enough that it could be mounted on a floating plant. Treatment of slurry pumped directly by a hydraulic dredge would be possible; however, the intermittent and unsteady flow from a dredge would hamper process control and reduce efficiency. Therefore, equalization storage of the dredged material would be beneficial.

COSTS

The cost of physical separation depends on the number of unit operations included in the setup. Costs for the setup used for the ARCS demonstration at Saginaw was about $70 per cu yd. Hydrocyclones alone would likely cost less than $10 per cu yd. Note that the cost of physical separation does not include the cost for treatment of the concentrated fraction of material.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 11 1994

OFFICE OF CONGRESSIONAL
AND LEGISLATIVE AFFAIRS

The Honorable Solomon P. Ortiz
Chairman
Subcommittee on Oceanography, Gulf of Mexico
and Outer Continental Shelf
Committee on Merchant Marine and Fisheries
United States House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Enclosed, for insertion into the hearing record, are the responses to questions you forwarded to Robert H. Wayland, Director of the Office of Wetlands, Oceans and Watersheds at the Environmental Protection Agency, following your hearing on Ocean Dumping. These responses were prepared by EPA's Office of Water.

I hope this information will be useful to you and members of the Committee. Please feel free to contact me if I can be of any further assistance.

Sincerely,

Thomas C. Roberts
Director
Legislative Analysis Division

Enclosure

QUESTIONS TO BOB WAYLAND
FROM CONGRESSMAN SOLOMON ORITZ
REGARDING OCEAN DUMPING
FROM THE JUNE 14, 1994 HEARING
BEFORE THE HOUSE COMMITTEE ON MERCHANT MARINE AND FISHERIES

QUESTION #1

What are the long-term dredge management options available to us?

ANSWER #1

The joint EPA and U.S. Army Corps of Engineers document, Evaluating Environmental Effects of Dredged Material Management Alternatives - A Technical Framework, (November, 1992) deals with this issue. The historical trend of short-term planning for dredging projects has to shift to a long-term, basin-wide planning approach. Further, where partnerships are formed by all stakeholders, both public and private, the potential for adversarial confrontations, permitting delays and missed opportunities is reduced.

Regional alternatives for dredged material disposal need to be identified. Such alternatives may include upland confined disposal facilities, open water sites, and areas for appropriate beneficial uses. To identify these alternatives, regional Long-term Management Strategy (LTMS) groups need to be formed. An LTMS approach which incorporates full stakeholder involvement facilitates the identification of area disposal needs, as well as available and potential disposal alternatives. Another advantage of forming such partnerships within this type of

ecosystem approach is the augmented potential for sediment source and contaminant source reduction.

In several areas such as San Francisco Bay, Galveston Bay and Puget Sound, this type of LTMS approach has been initiated and is exhibiting promising results. EPA feels that such a strategy is consistent with the Administration's plan in promoting an ecosystem approach to resource planning, forming public-private partnerships, and providing opportunities for pollution prevention.

QUESTION #2

Do the EPA and the Corps believe marine sediment decontamination to be a viable tool available for dredge material management?

ANSWER #2

Presently available decontamination strategies have several existing and potential drawbacks for use in management of contaminated sediments. They are briefly discussed below.

- Volume. Decontamination facilities, depending on type, may be able to process 100-400 cubic yards/day of sediments. A single hydraulic dredge can generate sediments on the order of 4000 cubic yards/day. Many dredging operations generate a million cubic yards of material on an annual basis.

- Storage and Dewatering. The differential in volumes discussed above leads to a need for short-term storage. Similarly, for many decontamination techniques, initial dewatering is necessary. Providing for storage or dewatering sites is often as problematic as siting permanent disposal facilities.

- Siting. Siting of a decontamination facility will likely encounter the same types of opposition as the siting of landfills, incinerators or other controversial facilities.

- Cost. The cost/cubic yard of decontamination is often one to two orders of magnitude higher than other traditional disposal options.

- Viable Industry. In order for economies of scale in the decontamination field to be realized, facilities may need to be mobile. Only 5% of the nationally dredged volume of sediments is considered contaminated. Much of that percentage is suitable for disposal at confined disposal facilities. The remaining volume is small and spread out in many industrialized harbors. Historical volumes of contaminants are no longer generated. Once highly contaminated sediments in any given area are remediated, the facility may need to be moved to the next area in need of sediment remediation in order to maintain economic viability.

- Timing. Practical use of sediment decontamination strategies requires many more years of research and experimentation.

QUESTION #3

What are the potential mid-term and long-term solutions for the future of dredged sediment disposal?

ANSWER #3

A coordinated regional effort to focus on the identification of available and potential dredged material disposal alternatives could define such solutions. As disposal solutions will vary regionally, a Long-term Management Strategy (LTMS) approach is recommended for all areas with sediment disposal needs. Available alternatives may meet the mid-term disposal needs allowing time for planning and implementation of long-term options. Depending on the specific volumes and the types of sediments generated in an area, alternatives may include open water disposal, use of confined disposal facilities, or beneficial use projects.

Federal and State cooperation toward contaminant source reduction also requires regional decisions which are facilitated by the LTMS or watershed protection approach. Reduction of point and nonpoint sources of pollution will lead to a reduced need for confined disposal capacity or, in the long run, remediation. In order to be effective, however, a source reduction strategy will need to remain regional in nature.

To illustrate, there are areas where pollution prevention will need to be accomplished through sediment load reduction by improvement of agricultural practices to minimize soil loss leading to sediment input to a harbor. In such areas, strictly enforced regulatory controls on point and nonpoint sources of contaminants

may be desirable. Other areas do not have the contaminant input, but are subject to coastal erosional forces. For instance, Louisiana and Texas have experienced a historical decline of sediment input to their estuaries due to upstream water diversion and flood control projects. This decline has, in turn, left beaches and barrier islands subject to erosional forces without the benefit of sediment replenishment from upstream sources. Augmentation of sediment loads which will shoal at beaches and barrier islands to prevent land loss, is, therefore, a goal in this region. The LTMS and watershed approach allow for such regional flexibility.

QUESTION #4

In reference to Section 502 of WRDA 92, what is the status of the National Contaminated Sediment Task Force? Who were the representatives to this Task Force and how were they identified?

ANSWER #4

Later this year, the Administrator (U.S. Environmental Protection Agency) and the Secretary (U.S. Army Corps of Engineers) will convene the Federal participants of the National Contaminated Sediment Task Force to discuss what each agency is doing to address sediment contamination issues. EPA's Contaminated Sediment Strategy will be useful in the development of a broader Federal agency strategy. In 1995, the full task force, including non-Federal participants, will be convened.

The representatives to the Task Force were identified in Section 502 of WRDA 92. They include a representative from EPA, the Corps of Engineers, the National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service, the Geological Survey, and the Department of Agriculture. Additional members include (1) States, (2) ports, agriculture, and manufacturing, and (3) relevant public interest organizations, with a maximum of three representatives from each of the three categories.

QUESTION #5

What is the status of the National Sediment Survey? What is EPA's estimated timetable for reporting its findings to Congress?

ANSWER #5

For the past several years, EPA has been working toward the development of a national inventory of contaminated sediment sites for both freshwater and marine environments. Based on experiences gained from pilot inventories in Regions 4 and 5 and the Gulf of Mexico Program during 1992/1993, EPA produced a document titled "Framework for the Development of the National Sediment Inventory". The report describes the approach to be used in compiling sediment quality data as well as how the information will be used by each EPA Program Office. Concepts from this document were presented, discussed and agreed upon at a 2-day National Inter-Agency Workshop held in March, 1993 in Washington D.C. For the next twelve months, EPA compiled data from over ten national and regional data sets into a centralized database called the National Sediment Inventory (NSI). The ten EPA Regions have been asked to verify this information this summer.

EPA held a second National Inter-Agency Workshop in April, 1994 to identify a methodology to be used in evaluating all of the data (sediment chemistry, biotoxicity, tissue residue and benthic community) contained in the NSI in order to identify and categorize both contaminated sediment sites and chemicals of concern for the country. The methodology identified at the Workshop will be applied to the

NSI data later this summer to produce a draft of the Report to Congress this Fall. We hope to submit the first Report to Congress in early Spring, 1995.

QUESTION #6

One of the suggested changes to the permit process has been to redefine the Corps' cost/benefit analysis of dredging projects to include as a potential benefit any environmental cleanup that occurs as a consequence of a dredging project. What would your agency's response be to this idea?

ANSWER #6

EPA supports incorporating the consideration of all benefits into the cost/benefit analysis for dredging projects, including environmental benefits. One Such benefits could be environmental cleanups that result from dredging operations. Such benefits could also include the beneficial use of dredged material, such as beach nourishment, wetlands restoration, or sediment replenishment, as in coastal Louisiana. Given that we believe that 90-95% of the national volume of dredged sediments are appropriate for some form of beneficial use, it is likely that such environmental benefits could occur much more frequently than environmental cleanups.

It is important to note that such environmental benefits are likely to be difficult to quantify in terms of dollars. For example, dredging that results in an environmental cleanup may be either a permanent or a temporary solution. How would either be valued in dollars? Particularly for a temporary solution, this may be extremely difficult to convert into monetary value. Although some aspects of beach nourishment or wetlands restoration -- such as the costs avoided by using dredged material rather than purchased upland or wetland soils for the project --

may lend themselves to being quantified, other aspects, such as the overall benefit of the restored wetland, may be much more difficult to quantify in dollars.

Quantification of benefits is certainly a difficulty in the current cost/benefit process, where wetlands values may be omitted from consideration, or inadequately valued, because of the difficulty in translating those benefits into dollars. Nevertheless, we believe that it is critical to address such costs and benefits. Without such consideration, expenditures are based on an incomplete consideration of the environmental costs and/or opportunities presented by a particular proposal. We would encourage the development of better methods for cost/benefit analyses to address these issues more quantitatively. In the meantime, we strongly support inclusion of all such factors into the analysis to the maximum extent practicable.

THE PORT AUTHORITY OF NY & NJ

One World Trade Center
New York, N.Y 10048

Stanley Brezenoff
Executive Director

(212) 435-7271
(201) 961-6600 x7271

August 17, 1994

The Honorable Solomon P. Ortiz
Chairman
Subcommittee on Oceanography, Gulf of Mexico,
and the Outer Continental Shelf
U.S. House of Representatives
Room 1334, Longworth House Office Building
Washington, D.C. 20515-6230

Dear Mr. Chairman:

It was my pleasure to testify before the Subcommittee on Oceanography, Gulf of Mexico, and the Outer Continental Shelf on June 14, 1994 concerning ocean dumping and the need for a federal dredging policy to address the national dredging crisis. On behalf of The Port Authority of New York and New Jersey, I appreciate your commitment to resolving this pressing issue and will gladly work with you and your staff to explore ways to solve this problem facing the New York/New Jersey region and the federal navigation system.

I have attached the answers to the questions raised in your June 23, 1994 letter to me.

Sincerely,

Stanley Brezenoff
Executive Director

Attachment

THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

Answers to Questions in Congressman Solomon Ortiz' 6/23/94 letter to Stanley Brezenoff

1) Question

Dr. Rees in his testimony also stated that the Corps and EPA are working on addressing a number of issues such as improving the consistency and dependability of toxicity tests, revised guidance on the re-evaluation and retesting of sediment, and the establishment of contaminants management thresholds, rather than nationwide standards. Do you feel that the agencies are addressing these issues properly and in a timely manner?

Answer

Both EPA and the Corps have the responsibility of providing consistent and dependable testing methodology that can be used by independent commercial laboratories to evaluate sediments. We believe that the agencies are attempting to address these issues; however, a lack of resources and the complexity of the scientific issues have hindered the agencies' efforts to act in a timely manner. As a goal, the agencies have set out to use appropriate risk assessment methodologies in evaluating dredged material management and disposal options, in particular those relating to ocean and inland waters. Nevertheless, very little has been done in this regard and the agencies have failed to keep up with technology in making a determination of "how clean is clean." EPA's new initiative to develop sediment criteria disregards the proper use of peer review research and field verification. For your information, I am providing the Committee with a transcript of a meeting that took place at Aqua Survey, Inc., a commercial laboratory, discussing test difficulties experienced with the use of the amphipod *ampelisca abdita*. EPA scientists and contractors referred to this testing as "art" rather than as science.

2) Question

The Corps of Engineers has stated that they do not expect dredged material disposal volumes to deviate significantly from historic rates and volumes. Do you agree and if there should be deviations, how will this affect current long-term disposal planning efforts?

Answer

Within the New York/New Jersey port region, we do not expect dredged material disposal volumes to deviate significantly from recent historic rates and volumes. We believe that for our region, ocean disposal of clean dredged material and capping of contaminated dredged material must continue and that our short- and long-term disposal plans should consider only those volumes of contaminated material that cannot go in the ocean.

3) Question

Do you think your problems can be addressed through administrative actions alone or is legislation also required?

Answer

The problem faced by our port is a national problem and requires both administrative actions and legislation. We are supportive of the AAPA proposal for a national dredging policy and hope that this Committee seriously considers the implementation of its recommendations. Legislative reform is required to fast track the present permit process. Mr. Menendez' proposed legislation to reform the dredged material process should be given serious consideration by the subcommittee. To a large extent, the current problem is a matter of how the law is being implemented. Much of the problem could be remedied through administrative action but to date, despite years of criticism and Congressional mandates, the agencies have not made the significant improvements that are needed. Thus we believe legislative action is necessary.

4) Question

What are the general costs to complete the permit application process? What percent of the total project are these costs?

Answer

At the present time, the testing and engineering costs associated with an ocean disposal permit within the EPA Region 2/New York District Corps of Engineers can be as little as $100,000, depending on the size of the project. For the Port Authority's Port Newark/Port Elizabeth dredging permit for Reaches B, C and D, the Port Authority spent approximately $1 million in testing costs and environmental consultation fees. In addition, we were required to dredge twice the volume that we would normally have dredged, since in the past we had been permitted to dredge individual berths on an "as needed basis" rather than dredge all the berths at once, as required by EPA this time. Finally, with respect to this permit, in our view the material was suitable for ocean disposal without capping, yet as a matter of prudence, EPA and the Corps required that the material be capped with sand throughout the disposal site, including large areas beyond the impact zone, to a minimum thickness of one meter. The capping requirement cost approximately $12 million. The total estimated cost of this project was $17 million while in the past, it would have cost the Port Authority about $1 million.

THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

5) Question

Do you feel that the volume of dredge material considered to be contaminated is rising? Do you feel that this increase is due to actual increases in contaminating activity or to the development and employment of more accurate and precise testing methods which are being used to detect a broader range of potential contaminants?

Answer

The volume of dredged material which is considered contaminated must increase with the increasingly stringent evaluative criteria. The level of contamination within the water column and sediments actually is decreasing, through improved source control and environmental enforcement of existing regulations. Nevertheless, there are "hot spots", such as the Superfund Site located in the Passaic River, which contribute to continuing dispersal throughout the New York/New Jersey harbor estuary. As technology improves, we have developed the ability to identify contaminants at extremely low levels and science has not kept up with that ability in its determination of the low level ecological impacts.

Attachment

AQUA SURVEY, INC.

MEMORANDUM

TO: The File

FROM: Mr. James Todd

DATE: June 1, 1994

RE: Transcription of EPA Meeting, Dated March 24, 1994

The quality of the audio tape from which the transcription was made is spotty. As a result, there are word(s) that are not decipherable and these have been left blank. Nonetheless, as a participant in the meeting and the transcriber of the tape, this written record does convey the actual substance of the meeting.

The following individuals attending the meeting:

Monte: Mr. Monte Greges, Chief, Water Quality, U.S.ACE

Jim F.: Mr. Jim Ferretti, Aquatic Biologist, U.S.EPA

Margo: Dr. Margo Hunt, Environmental Scientist, U.S.EPA

Alex: Mr. Alex Leccich, Environmental Scientist, U.S.EPA

Norm: Mr. Norm Rubenstein, Acting Deputy Director, U.S.EPA

Chris: Mr. Chris Schlekat, Marine Scientist, SAIC

Scott: Mr. Scott Douglas, Sediment Toxicity Program Manager, Aqua Survey, Inc.

Jim T.: Mr. Jim Todd, Director of Operations, Aqua Survey, Inc.

asi 499 Point Breeze Road • Flemington, New Jersey 08822 • Telephone (908) 788-8700 FAX (908) 788-9165

The key for this transcription is as follows:

?:	-	unable to identify speaker.
....	-	speaker being interrupted as others begin talking simultaneously - unable to decipher any conversation.
________	-	word or words that were undecipherable.
( )	-	something not actually spoken of but referred to in conversation.
(unable to decipher)	-	unable to decipher what was being said.

Jim - Introduction: Not on tape.

Norm: Basically, we discuss what the issues have been, what the problems have been. We'll give you the benefit of our technical people's expertise, and hopefully, address any of these problems and be able to resolve them.

I think we are here for one simple reason. I have got a definite academic interest in seeing what problems are being encountered with this test and if, in fact, we see something in a constructive and facilitative manner, that we might be able to help you successfully accomplish the test – we'll point it out. It's basically why I am here and I brought Chris. He's done a lot of amphipod work through our outside technical support contract, and I've asked him to take a look and offer his opinion on these things.

Monte: I'd just like to make a point too, that this isn't an audit, that we are here just to find out what happened, and for everyone to benefit from everyone's recommendations today. So, if we could all check our egos and affiliations at the door, this is really just for our intellectual benefit, if you will, and it will effect the decisions that we make in the future.

Jim T.: The first item that we have is to discuss general issues and problems experienced by the lab. Now, I presume, that refers to the MOTBY project, and there is another procedure down here talking about taking a look at and discussing items regarding ammonia purging. Those are kind of one and the same, so I presume, that's what we want to start with when we are talking about discussing these general issues and problems.

Norm: I understand, I really do, but the basic issue is one of species availability. The availability of appropriate test organisms, and I'd like that to be the first thing on the table. It seems like the crucial issue.

Alex: The reason that we even have ammonia purging, as mentioned in there, is that from what I understand, one of the points that you guys have brought up that was a potential problem, was the time frames involved with purging, and so forth, and maintaining these organisms over certain time frames. But, that's in the mix of the problems you've been experiencing so in that context, we want to address that.

Scott: I guess, in a nut shell, both of these issues are kind of hard to tear apart. We are trying to do something where we are bringing two situations together, at the same time. One is to get organisms to test temperature, after collecting in the field, this time of the year, from this area. And also at the same time that you get the organisms at the right temperature, is to get the ammonia out of the sediments. Have that all come together minimizing the time for each activity, which in and of itself, is sometimes problematic. The things that came up as we did this were: The time to purge the ammonia from the sediment varies because

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the ammonia seems to vary. And if people are interested, that probably warrants a closer look. Why that's going on? But more to the point, when you try to bring the *Ampelisca* up, when we tried to bring them up from 1° or less, up to test temperature, we saw that we were getting organisms by the end of the holding period, that either were not acceptable to go into a test for other health reasons, or they were mature, sexually mature. The first cut, when you are trying to find out whether you've got animals that are ready to go into a test, is the screening procedures that are suggested in all the SOP's and also to take a look at them to make sure that they're not sexually mature. It seemed that when you hold these guys for the length of time that we are trying to hold them, that becomes problematic.

Norm: Let me just respond. The test was never meant to be used in the fashion you've just laid out. This test was not designed to work with ammonia. We are mixing apples and oranges. The test stands alone as a 10-day acute toxicity test with, I think, a very well defined conservative protocol. The problem here is in the application. I don't think there's any solution to this problem and the way you laid it out, other than being very lucky, to get everything timed right. I think the premise is flawed and I'm not surprised things turned out the way they did.

Jim T.: If you take the ammonia purging issue and separate it for the time being, and you just deal with the facts surrounding the *Ampelisca*, which is that when we collected them, they were at 1/2°, as I remember, and we then bring them up reasonably slowly so that we can get up to test temperature.

Norm: You can bring them up as much as 3° per day. That means that you are looking at six days.

Scott: And then hold them for a couple of days at test temperature. Well, that's recommended.

Norm: Yeah, that's recommended. I am going to admit right up front that a test like this requires a certain amount of understanding of the biology of the animal, a certain facility in dealing with it, and much of this is gained through experience; it's not the type of thing you are going to get out of a book. We are mandated to do effects testing. It's not a cookbook type of procedure and never has been and we say right up front, doing these tests requires a certain familiarity, a certain degree of expertise and not everybody can do it, we know that. The point I wanted to make was, the protocol says six to eight days this time of year to get an animal thoroughly acclimated.

Scott: That's right, and all we are trying to say, and the only thing we have tried to say, is when you hold the animals for the length of time we did for this project, we ran into difficulty.

Norm: Did you hold beyond the 6-8 days?

Scott: Yes, we knew at that time they might be a problem.

Chris: That's not surprising at all.

Scott: One of the things we did when we came upon, and this may be the most interestingly technical for you, is that we were, needless to say, disappointed when we found out that we had organisms that were too large, starting to go through the acclimation.

Norm: The size of the organisms I have -- I don't see that as a selection criteria. It's not size, it's reproductive condition. The standard protocol says that you can use animals from 3-5 mm in length.

Scott: But it also says how to know that you have organisms that are 3-5 mm in length. It is to use the sieving procedure, and they've laid out in this book (points to ASTM Manual), and use your 2mm screen on to .5 and then sieve them again using a 1.

Norm: The protocol, I recall, says when you use organisms retained on a 1/2 mm sieve, they don't have to go through a 1mm sieve.

Scott: Oh, but that's not true, and this (referring to the ASTM manual) is what I was using as my best available technology for the last two years until we coerced this out of you (referring to the draft EPA Manual) right there. Now if that's not correct, I have got no problem -- change it.

Scott: And I know that's (the ASTM manual) outdated.

Norm: It says "can." Now I know when you look at these things, this is not a "must." This is where the experience factor comes in. These things are written by people who are very familiar with the test.

Chris: And when it says that you "can" do this, that is about the softest stuff.

?: That's right.

Scott: Oh, I know that, I sit on the ASTM subcommittee....

Norm: And let me tell you, we'll run into 100 issues like that. I am telling you, as someone credited with this technical acumen, that we don't have to pass through a 1mm.

Scott: That's good. That also needs to be -- if that's true, the language in this is even stronger. It says go through a 1 and set on a .71 and (referring to the SAIC Round Robin protocol).

Chris: Well, it says should and that will....

Scott: We did our first test with this in '91 and we've run about 15 of these guys, and we've had reasonably good success running them. The issue that's come up from both our experience and going around the country, polling other contract laboratories experience, is that at this time of the year there is a biological reason why it might be much more difficult to successfully conduct the test. That's really the technical issue we've been bringing up.

Norm: Oh, we recognize that.

Scott: That's really all there is to it. We are capable of running this test successfully. We have done it.

Norm: I think that we do recognize that in the winter, especially a winter like we've had, it's been harsh, very cold temperatures, animals will not be as readily available, especially the smaller ones.

Chris: And that's where you, you as a testing lab, have to enter into a dialogue with your organism supplier. If you get them yourself, you have to maybe exert an extra effort to concentrate on getting a greater proportion of smaller animals or direct your supplier to do that. It might be more time for him, and it might be more money to get those animals, but -- if you were going to get them at the lowest temperature, bringing them up and were going to be....

Scott: That would make it a lot easier to keep them away from the sexually mature ones.

Chris: But let me just get back to something with the size issue. The criteria for sexually mature animals -- it's not that there may be some differential sensitivity. The driving factor is to fulfill the acceptance criteria for the test itself and the fundamental acceptance criteria is that: (1) they exhibit 90% survival in the test sediment at the end of 10 days. If you have sexually mature animals, the likelihood is if they do mate during the test, they will die thereafter. That's the criteria.

Norm: (Unable to decipher)

Scott: We have had that happen, and you can actually look inside. Like when we ran those samples from 80 Lister Avenue, last March. The last two years the test that we've run tests on *Ampelisca* have been this time of year, of course, which makes us a little bit sensitive to this issue. You can actually see the little guys when they breed, when they drop babies in the chamber. So I mean, we've tried to do whatever we could to start a test and use bigger animals than the 1mm ones.

Then we have the problem that we still are seeing a control survival problem at this time of year, and I've talked to some of the other labs. I got a call yesterday from a woman in California and she's trying to run a whole bunch of tests and she's had up to 100% control survival, but, everytime, at this time of year, she runs into a problem. She's got a sample right now. She's run it three times and never gotten above 75% control survival. When I talked to John Brezina, who is a supplier from the west coast, he says this time of year, sometimes, it is impossible to find juveniles in the field. And he also said that people at this time of year, even when he can give them the juveniles, and they do have enough to run the test, that labs that usually can pass the test have difficulty. We're not talking about new labs, we're talking about experienced labs, will have a higher percentage of failures, control sediment failures, we're not talking about test sediment, this time of the year, as opposed to others. I have been talking with John and this woman Diane Griffith of MEC. We are going to try and see if we can collect a data base of all the contract labs, and we would like to have your guys' data, if you want to share it with us and see if we can put it on a time line and see if we see any trends that are statistically meaningful.

Norm: I think we've, you know -- there's general agreement than in the dead of winter it's tough to find a test animal. It can be done and we have done it. But there's another thing to be put on the table now and that's the fact that when the original guideline's were laid down two years ago, we didn't feel comfortable with any other amphipod protocol. Two years later, we sit here and we are ready to move forward with the *Leptocheirus* test. With the culture of this animal, the availability issue becomes moot. And I think we will see that there will be more flexibility in the testing protocol to allow for the use of *Leptocheirus*. I think the region will still prefer *Ampelisca*, because of the larger database and the fact that it's truly an indigenous species in the northeast, not that *Leptocheirus* isn't. I think that will alleviate most of this problem.

Scott: We'll be very happy. I'd much rather have a cultured organism that I can have in the back room ready, whenever I want, rather than an organism that I have to go out in the field and never know what I am going to see (general agreement). We all feel that way, not to mention buying them for $1.00 piece from somebody.

Norm: Not only that, but the next step is going to be a chronic, which is called for in the regulations. So we are moving ahead. I don't have to tell you that this is kind of an evolutionary process, iterative, and a slow march, hopefully forward, and we get better methods. We have come a long way from soaking quahogs in a sediment. That's really what we're trying to do is come up with a more meaningful, environmentally realistic assessment.

Scott: I think that's where some of the problems that have come in: that even though a lot of the scientists involved understand and know that this is an evolutionary process and also understand -- I was talking with Ted DeWitt yesterday; his key word was limitations -- that all the tests have limitations, that there are certain things that they can do, very well. In the case of *Ampelisca*, it does do a very good job in a lot of things, but it does have limitations. When you put together

a program, you've got to have a certain amount of flexibility in that program to deal with the limitations and to be able to add them into your decision-making paradigm. I am speaking to the regulators now. If your decision-making paradigm is to allow for that flexibility as you discover new limitations, inevitably they are going to come up. The more experience we get, the more we learn about the critter, the more we find out what its limitations are. Some of those we'll be able to be overcome. Maybe one day we'll be able to culture *Ampelisca*, but some of them may never be overcome.

Chris: I wouldn't count on it (being able to culture *Ampelisca*.)

Norm: It's a tough animal to culture, and we're on the same wavelength here. Our job is to make these tests more implementable.

Monte: I think, on our part, we realize that most of our testing will be done in the winter with the fiscal year starting in October. We usually don't get the money until November, sometimes December, and by the time we get everything put together and ready to go out, it usually is during the worst time, between January and March. So that's just the reality that we are going to deal with -- that we will always and then not always, but for the most part, the bulk of our testing is going to be done during these winter months.

Norm: To tell you the truth, I don't have any problem with the *Leptocheirus* in terms of sensitivity. It has similar sensitivity.

Scott: It is less sensitive to ammonia, as you guys have pointed out.

Chris: Well, yeah, but it's essentially the same. It's a question of....

Monte: So, for the thinking that we would move from one organism to another, mandatory organisms from *Ampelisca* to *Leptocheirus* or would it still be....

Norm: Mario is still drafting the letter. I am not sure how it's going to come out. I think he's going to give some degree of flexibility so that if *Ampelisca* is not available, you can go ahead and use *Leptocheirus*, but they still prefer *Ampelisca*.

Norm: I could understand why, at this point.

Monte: (Unable to decipher)

Monte: They fail to mention the Green Book, which is surprising. Actually the newest version, which is surprising.

Scott: I want to get a copy of that.

Margo: The way the regional implementation manual reads now, you have to do *Ampelisca* and one other species.

Alex: Considering, under certain circumstances, *Leptocheirus* can be used in place of *Ampelisca* and whether or not, and we still haven't discussed it with the district, whether or not an additional one would need to be used, which was originally your position that we use two.

Margo: Because the requirement right now in the regional implementation manual is to use two amphipods.

Monte: The reason it's worded that way is when we were putting the manual together, EPA essentially mandated the use of *Ampelisca*, and our position was we'd rather give applicants a choice to use whatever approved amphipods are out there. So *Ampelisca* remained and we said so, if that's going to be the case, then we'll have them run another amphipod as well, because we had some questions about the use of amphipods, so that's why it's worded that way.

Alex: What it may be is under certain circumstances, which would further have to be defined and demonstrated, that *Leptocheirus* may be a substituted organism, and in conditions where you have sandy sediments that *Rhepox* would be, again, depending upon the district, still would want another organism to be used along with it. The *Rhepox* would be more of a sandy sediment dweller and would be used for those sediments.

Scott: Which we don't have a lot of in the New York bite. You have got to be real careful of *Rhepox*. In DeWitt's paper, he says that they don't like fine grained sediment, and I was talking with Ted yesterday and he reiterated, there are some issues with *Rhepox* and fine grained sediments, and that's what we have got. So we've got to be careful about picking that one unless we want to go through the process that he recommends in that paper, to do a linear regression.

Norm: That doesn't really always work.

Scott: Well, there you go.

Monte: If I can ask a procedural question, because this came up several times in our discussions – When should the animals be sized? When should the sieving take place? Should it take place when you are collecting sediment? Should it take place as soon as you get it back to the lab, or do you wait to acclimate the organisms and then sieve? Or in the case of when you get organisms from a supplier, do you sieve them as soon as you get to the lab, or do you wait and acclimate them and then sieve them for size? What's the preferred way to work with them?

Chris: What we did, is size them before we acclimated them.

Monte: O.k.

Margo: That's essentially the way it reads in the ASTM.

Scott: The thing that we have been doing is a little bit different from that, we try to avoid handling them too much, is to sieve the subsample and you and Jim and Margo were on the boat yesterday when we were collecting animals, is to sieve a subsample and get an idea of the percentage of juveniles and then collect an appropriate number of grabs from that location based on that initial sieve. And then bring them back to the lab and acclimate them up. And then sieve them when they are ready to go into a test. It means that you are going to do a little more sorting the day the test starts, but that eliminates that second set of sieving, which is what John Brezina recommends. He does not sieve his animals when he collects them, except for a subsample, to get an idea of the percentage of juveniles.

Chris: I don't know if you necessarily have to be shy about sieving these things. We do give very strong guidance about avoiding undue stress, but at the same time, they're fairly hardy animals.

Norm: Obviously, I know what you mean. The intent is for a lab to take reasonable care and I think that we stress....

Scott: Do you think it makes any difference between which way you do it? It also eliminates a labor step, as well.

Chris: Yeah, I couldn't say whether or not it would make a difference. I don't know if there's evidence to say one way or another.

Scott: Other than making sure that you have enough organisms to start your test, which, of course, is a logistics issue. We don't want to end up being, on test day, realizing you don't have enough juveniles and forcing an issue where you are using fewer number of organisms per replicate or using organisms that may be too large.

Jim F.: How many tests are you trying to obtain animals for the last round where you didn't have enough of the appropriate size? How many animals were targeting?

Scott: 720 -- and they did what? 17 grabs they were saying?

Jim F.: That was just yesterday.

Scott: What was the percentage? Did they calculate it while they were out there?

Jim F.: They checked, but I didn't ask them.

Scott: I haven't had a chance to talk to them.

Jim F.: But the previous test that you actually weren't successful in running -- how many animals did you target that time? 720?

Scott: Yes.

Jim F.: They only obtained 5 grabs from each that time.

Scott: To make sure. Tripling to make sure they have enough of the little ones.

Jim F.: I took two grabs from each of the sampling. I was going to break them down according to the size and maturity -- that type of thing.

Scott: You're going to key them all out. Are you going to go through and take everyone apart -- sex it and size it?

Jim F: Size it within a couple of mm range. There was a vast difference in size range. There were young ones. There were some mature ones. But I just started picking them last night and this morning.

Scott: I am not saying there aren't. There are some all year round. There's a question of what their availability is and whether we can hold them for a length of time we were trying to. We were trying to have the application that, you know, this whole job in that all of our comments, thus far, have been our best on this one job, which may be technically impossible, but as we discussed before....

Monte: Chris, if you are sizing them before you acclimate them and you are getting a pool of organisms to use of a certain size and it takes six or seven days to acclimate and you are raising the temperature, in some cases, 18° or 20° and you are not sizing them again, is it possible that the spurt that they are going through in that 7 or 8 days would give the organisms too big and then if you are not going to size them before the test, the organisms would be too mature?

Norm: It's not the size, but the reproductive state.

Monte: You should be able to post them when you are putting them into the cups. There wouldn't be any difficulty in that point.

Chris: One still observes the organisms when one selects them. You select them individually.

Monte: Alright, so at that point, you are not sizing them.

Chris: One is relatively sure at the beginning of the acclimation period of a particular size range. Then when you are actually sieving the animals out for the start of the test, and you do happen to see a few isolated occurrences of mature animals -- those are fairly easily picked out, selected or passed over.

Scott: What we saw was that a lot of them, like better than 90%, was either too big or mature at the end of this last.

Alex: That was what my question.

Scott: And when I say too big, I mean, you know, when you are dealing with organisms that won't go through your two, and then you start looking at them under the scope – with the females, you can tell when they have brood pouches; you can see that. It's very clear to the naked eye. Even like this you can see them. You start flicking them underneath.

Chris: But this is not something – I mean that we (SAIC) have never encountered problems like that. I should qualify that by saying that the bulk of the testing that has been done has been anywhere from March through October.

Jim T.: What's the longest you can recall, the longest acclimation that you have had to go through and the lowest temperature you had to start from? Scott, do you remember what the duration of our acclimation was when we looked into this problem - six days, ten days?

Scott: Well, I have the acclimation log. One of them was 14 and one 17 days. 14 days was supposedly the maximum you could hold them, according to ASTM. And even that, you guys have said you would like to back that off a lot. So one was 14 and one 17. That's too long and we pretty much knew that that could be a problem. It wasn't that we didn't know that it could be a problem. Let me ask the question differently, though. We are starting with the lowest possible temperature. Let's say, for argument's sake, we are starting at a 1/2°C this time of the year and bringing them up to test temperature of 20°. We don't have the ammonia purging issue to deal with, so we don't have to have those two things happening concurrently. The maximum acclimation time that we are going to have is six to eight days.

Scott: And the two day's holding, so you say 10.

Jim T.: Norm's saying that you might not need to hold. So if we are looking at a six to ten day period or time frame, based upon your experience, Chris, is that going to cause a problem with regards to reaching sexual maturity?

Scott: Even at this time of year?

Chris: I really don't have the evidence to say one way or the other.

Norm: There may be a period of time where we are between populations. There's the over-wintering population and the summer population.

Chris: Let me just get back to that. I would still say that given that you are starting with an acceptable size range, within that period of time, it would be unreasonable to expect that all of the organisms or even majority go to sexually mature during that time period. I mean that's just based on my knowledge of the organisms and my experience with acclimating this organism.

Margo: Starting off with your worst case scenario in starting at 1° and allowing two degrees for acclimation, you are talking eight days, so you are looking at the worst case scenario.

Chris: And that's probably being very, very cautious.

Margo: Because you are allowed 20±2 and so, as you said, 19, 18, you are already there. If you are going to follow the ASTM protocol, it says in here that you are going to sieve sediment for the amphipod and then you put them in a control sediment and you acclimate and hold under those conditions.

Scott: Remember, this is a guideline, as Norm said, not a method. These are suggestions.

Norm: That's right.

Scott: When you call the experts who have helped write this, like Janet (Lamberson) and Rick (Swartz), and the people who have experience in the contract labs, you don't always get the same answer. Sometimes they will say, "don't to it that way, we do it this way. We've had success in doing it this way." So you've got to be real careful about using that as a regulatory....

Norm: That's right. That's what I tried to say earlier. You are not dealing with a chemical cookbook procedure. There's an experience factor here, and I forgot my point here. It will come back.

Jim T.: Speaking more from a businessman's standpoint, because that's more often the role that I fill here, the flexibility is important to us because if we are mandated to use a specific organism and if there is some general recognition that there are certain times of the year, namely the winter months, in which it's more difficult to get a test to run, that means that we can't fulfill the Quality Control requirements of getting the 90%. So if we have flexibility that we can select other organisms that are agreeable to everyone that lets us resolve that issue in an amicable fashion, and we can continue to do work because we do work all year round down here from people that want to dredge. I know, for instance, up in the New England district, we do a project now and then up there, I know that we have a dredge window that's fairly tightly defined. We don't have some of those limitations down here, so we are used to doing work all year round, including the winter months. It's good to talk about these things and hopefully, this meeting that we are having, or that you guys are having down in Washington, will resolve some of these issues such that we here, in our local regional EPA district and ACE district will have more flexibility in these tests. That will resolve this particular problem for us in dealing with these test specifics.

Norm: I think that we all agree that this is guidance, very generic, what each lab really has to do for there own QA/QC requirements is develop their own SOP's. You have a particular layout in your lab, you use a certain type of seawater, you stock certain types of pipettes, you have a unique temperature control system – whatever, the SOP's have got to come from the individual labs. They should be based on this guideline, but the QA/QC has to be developed right here. And what's appropriate for one laboratory isn't necessarily going to work for another.

Scott: I agree. This book (referring to the EPA draft guidance), incidentally, I've had the opportunity over the past week or so to read through the whole book.

Norm: It's still in draft form.

Scott: Yes, I realize that. It's still in draft form, but, goes a long way to covering a lot of the procedural variability....

Norm: You have two gurus of amphipods, one on the east coast and one on the west, and Rick Swartz is the west coast.

Scott: And it has his comments?

Chris: Well, he's got it. He's had it about six months.

Scott: But this goes a long way toward developing the things that are going to be -- especially the performance based criteria section, which is in the freshwater book which we've got through ASTM, but again, is in draft form, is excellent for helping to give auditors something to go on, rather than go on something like this (referring to ASTM), which is something that may work for us but not for everybody. This brings an actually performance based criteria by which you can judge how a lab's procedures work, not whether they match everyone else's, but rather they work for that lab. That is probably the one thing we've been missing in testing. What works for one particular lab may not work for another, for whatever reasons. Not everyone has the same type of equipment, not everyone can stick a hose out on Narragansett Bay and get their seawater, and whatever situation, and I think the allowances that people like me, working in a laboratory, have to make, are going to be based upon what I have to deal with. If I can show that I can get good results using my method, it should be acceptable.

Norm: That's right.

Jim T.: Next topic: Look at and discuss any updated lab SOP's since 12/15 and QA program for conducting this test.

Scott: Here are -- this is the SOP based on -- this is everything, and I can break this down. I have just the ones that are requested here. Just to let you know, this is based on the conversations that Ken had with Lisa back in the middle of December. We've update our SOP's. These have been updated, as you can see, since then. This latest one for *Ampelisca* collection and holding takes into account a lot of this stuff, a lot of the new literature which we didn't have, so this one's updated even more than what we said. All of the comments that you (Margo) and Lisa made were put into effect and they're right here, in addition to some others, so if -- your welcome to go through any of those, the ones that are specific to what we're covering.

Margo: That's the one I have.

Scott: This is obviously very old.

Margo: These are the things that have been changed.

Scott: These are the old ones, all the old ones. All three of these should have been the ones you had a chance to look at. Now I know Ken made some copies and sent -— okay on the 15th – there's a set of these that actually precedes these. You guys commented upon them and sent them back. We made corrections to those and sent them out. These are those that were sent to you. You guys should have these, and have had a chance to look at them.

Margo: That's actually a later version than that.

Scott: Yes. This is the current working set. This one was sent to you. Jane faxed it to you.

Margo: Jane sent one. Has that been changed since?

Scott: No, they're only typos.

Margo: I never bother with typos.

Scott: This one says less than 30, when it says less than 20 right above it. Other than that, it hasn't had – and also this may be a little bit confusing. It says the same thing twice here, and what I neglected to do was to put a – there's a whole set, and we added this as a freebie to Monte because he's such a good customer, that we were going to do both purged and unpurged so that we had something we could statistically compare. So there are two sets of this whole set here.

?: Why are you doing it twice?

Scott: Because half of them are for purged, half for unpurged. So this is them. Now this, you'll see, is slightly older than the one that's in the book because, this is what we did. This is the procedure we followed to get the animals that have been so controversial and then we have further updated and refined this SOP.

Scott (to Margo): You have the one previous. This one is the one we followed. This one took and updated comments you had made and Monte gave us in this letter. We got this letter on the 27th of January. To put it back in order again, just to cover it again, you had our SOP's, Ken went in and talked to Lisa, went over the SOP's, we came back, faxed this set to you, to someone.

Margo: To Lisa or to Alex, who then gave me a bunch and I just started looking at them.

Scott: Then you guys sent out this letter, which was our go-ahead letter. This was the letter from January 27 which says go-ahead and start, but we want you to take all of these things into account. So, revisions that take this letter into account are right here.

Margo: O.K.

Scott: So this is the set by which we operated on this study. Now we made some changes to them, but they don't involve the study, with the exception that we added to the collecting procedure the suggestion that we sieve our animals in the field to get the percentage of juveniles. That's the only change of substance that's made to this SOP, for this collection time. The ones, the animals that are in-house right now that they collected yesterday. That was the only substantive change, which we thought was appropriate that we wouldn't need approval for that. It just makes prudent sense.

Alex: Which ones were changed? Which ones were changed of these three that you just gave Margo?

Scott: These three -- she has -- the three that were on the bottom.

Alex: Are these the ones that she has already?

Scott: She's got them. These are the ones that you got back in December.

Alex: And that I gave to Margo.

Scott: And then, Monte sent me this letter saying go ahead and start testing the mud, but take into account all of these things. As long as you take into account all these suggestions, you can go ahead and start. We went ahead and started and then as we got time, we revised the written SOP's. I made sure everyone knew that I was following the old SOP's, plus this. And as I got time, I revised the SOP's, and those we sent to Margo on the 15th of February.

Margo: This one you sent me.

Scott: And this one you should have gotten, as well.

Margo: The correction, last date I have, and I just finished looking at it, is these short pages.

Scott: This is the one that we operated under. This one takes into account these (Monte's comments), and I apologize that it took some time to get these in writing, but we were following our old SOP's, plus them (Monte's comments).

Jim T.: So Scott, let me summarize this. Essentially, this then, is a written record of what we did for this study that we've been talking about?

Scott: Yes.

Jim T.: Since that time, and the receipt of the guidance for Chris, we have updated our SOP's again.

Scott: Yes.

Jim T.: Okay, but these are the SOP's that we've followed and have taken into account all of the comments in the study we're talking about.

Scott: See, the problem is, as Norm has pointed out, that these things evolve. You just can't take one SOP and ignore all future information that you get. You've got to apply it, and if it's good information, and it means you're going to have a more successful test, you don't wait to get an SOP approval to make that change, you do it.

Norm: The object here is not to see how closely you can follow a particular method. It's to get good results.

Margo: Bottom line.

Norm: That's what it's all about. Get a good test, good control survival, and a good endpoint.

Scott: Sometimes I think we do get bogged down in paperwork; that's not to trivialize it. The paperwork details are important, and are becoming more and more important as we get into fighting these things out in court, what you did, and what he said you did.

Norm: It ultimately comes to that, there's no getting away from it. I ___________ that the methods are written -- the more we must and should -- the easier it will be for everyone to do this thing.

Scott: I hate to see what has happened in some of the FDA program and TSCA program, FIFRA-TSCA, GLP program. Sometimes, and we have someone here who's been doing that work for 25 years, and he says that sometimes the studies actually get run poorly. You follow the SOP or protocol at the expense of doing something right and smart. And I hate to see that happened to this program.

Norm: You're right on and, that's something that I am particularly, acutely aware of. GLP methods, for example, are do-able, fairly easy to follow, but we all know that the detection limit issue is totally out of line with meaningful environmental endpoints. We spend a lot of money doing things, getting a lot of _______ and generating a lot of useless data, and that doesn't do anybody any good.

Scott: For the GLP program -- GLP's -- they were written for rodent testing, and we've tried to apply them to aquatic testing, and you can, but unfortunately, I think that you end up in a position that you end up generating reports that reflect exactly what was done, but don't reflect the reality of the situation which an experienced lab investigator knows. This is crazy.

Norm: The other thing we're pushing, and I think this is a critical issue, and that is going from methods-based approaches to performance-based approaches. The sooner we move ahead with that, the better off we'll all be.

Scott: I think that will make Margo's job easier, especially because, it's right there, this is what it is. Rather than worrying about a lot of art, really what it amounts to art, the art we do, worrying about how you're going to audit art, which is almost impossible to do, without just getting a lot of people very irritated, and actually have something that you can look at a set of numbers and coutrol charts. It's useful, here, it's good stuff.

Chris: That's ultimately going to apply. If labs do these *Leptocheirus* cultures, the criteria for acceptance of a cultured *Leptocheirus* is not going to be how you received them, etc., under those conditions, but it's going to be how they fared in a test.

Norm: The ultimate performance.

Scott: Ask the animals -- they should know.

Monte: Does *Leptocheirus* also die soon after mating?

Norm/Chris: No.

Norm: You can culture them.

Chris: They produce up to 6-8 broods per female.

Scott: Oh, really?

Chris: Yes, and one doesn't really know how many mating occurrences the males go through.

Scott: How many sources of them are there right now? I called Chesapeake and they've been stonewalling me on getting some babies up here. Did we get any progress on that today, Jim?

Jim T.: I don't think so.

Scott: Do you have a list of suppliers I can call to get some? I want to get a culture started because, I bet you that when that decision gets made, there's going to be a lot of pressure to already have our performance-based criteria established.

Chris: We don't have any for you. That's probably because they're saving them up for the round robin. You might want to talk to Ted.

Scott: I did yesterday. He said to call some guy Vonmonterons, at VIMS, that his wife has a culture lab.

Chris: Oh yeah, yeah.

Scott: Is that Chesapeake?

Chris: No.

Scott: Good, maybe I'll get some from there.

Chris: I'd also call -- Beth McGee will probably sell you some, University of Maryland. There are other sources.

Scott: Give me Beth's phone number, so I can get to her.

Jim T.: Number 3 on this list. Is that what you want to do next?

?: What's that?

Jim T.: Look at and discuss any paperwork generated by a lab on collection, acclimatization and holding of amphipods.

Alex: Maybe we can go back to the first issue, I'm not sure, and then maybe we can address it in this way. This project obviously was a MOTBY regulatory issue, but wasn't run on a regulatory basis, for various reasons. One was that the samples were held longer than the QA required. You guys did these procedures. You wanted to see how they would develop in actual test conditions and so forth, and you've experienced these problems from the discussions that we had earlier. I thought I heard a couple of things that, in terms of the test, can be done, perhaps looking at more sediments, or trying to get more small organisms or whatever. Are we at a point now where we can make any agreement, not agreements, but can we basically say that we, perhaps, could have learned something from the discussion that we've had and perhaps, run these tests successfully, as you said earlier, under different conditions. You went sampling yesterday....

Scott: Yes, obviously the jury's still out. When we get to the end of our acclimation period, the only thing, like I said, the only thing that we've changed between the last time and this time, is collected more animals, a lot more animals, and based on doing some pre-sieving in the field. When we get to the end of the acclimation period, we'll see what happens and let you guys know. If everything's fine, then we'll have to wait ten days to see what the animal's size is in the control material. Obviously, if we start the test, that's progress. Because last time we didn't even get to that point. If we get to that point this time, and then 10 days later we have a successful test, well, that speaks for itself.

Jim T.: I think one of the conclusions, at least that I drew from this, and I think everyone would concur with this, and I think that's what you're trying to wrestle out of this -- to see if there's a general consensus about what happened. There are going to be times, during the year, when it will be more difficult to run this test, and that probably is during, sometimes, during the winter months.

Norm: There is nothing that would preclude you from getting your animals from other sources.

Jim T.: California?

Norm: Yes.

Jim T.: Yes, but even our experience, in speaking with John Brezina, who's the organism collector -- Scott's had the conversations, I'm just summarizing -- but he says he would feel, as well, that there are certain times of the year when it's almost impossible to get a sufficient number of organisms to ship them to you to run a test.

Scott: He was telling me, actually today, and I had to buy some animals from him, that came in yesterday, he told me when I talked to him yesterday, when the animals got here he told me, "I really wish you guys could have waited two weeks. Two weeks from now we're going to be into the summer generation. Everyone's going to have a much better time. He was actually talking with Faust Parker down at SP Houston, and Faust had been talking to his regulatory body, Rick Medina, and from what we have been able to gather, and we haven't been able to get Rick on the phone, they actually decided to change the performance criteria, that they were going to look at lower control survival, based upon which Faust had said about trying to run a test this time of year. So, you know, I don't have any evidence to support that. I'm looking at starting a little bit of a research study to see if there is some evidence for that, but there certainly is enough evidence, looking at the Mills paper, and looking at the evidence across the different contracting groups across the country, that at certain times of the year, that not only may it be that it is harder to find the numbers of organisms, especially for a large test like we would do under the contract. But it also may be that those animals have a higher sensitivity. I think that's because you have to hold them longer to get to a higher temperature. Maybe it's because their lipid reserves go down, who knows. I mean that's a question for you guys to answer. Why? But there seems to be some evidence out there from what we've been able to gather, that there is a problem at this time of the year. Glen presented a whole bunch of data in Cincinnati, and in his own amiable style, said that at this time of year, "we pull our hair out." Now I don't know whether you guys have developed more data or done anything with that, I remember sitting there and writing that down and going "oh, great!"

Chris: I also know that, were John to be here, he would state, at this moment, there is no evidence to suggest that sensitivity varies seasonally or with any predictability whatsoever, other than statistical confidence.

Norm: We are going to be looking at the issue of thermal stress, a harsh winter, temperatures ____________ are really pressed for a fairly long period of time. Common sense would dictate that this isn't the best time for this animal to do its thing. Once again, that's all part of where we're going now with trying to

provide more flexibility in protocol, bringing in a culturable species to address this problem. I think once *Leptocheirus* becomes incorporated within the test protocol of the original manual, we won't have this problem any more.

Jim T.: I'm a little bit concerned, and I guess I'm putting words in Alex's mouth, and I'm sure he'll correct me if I'm incorrect, this letter that Mario is drafting, what I think I hear you saying, he may write some exceptions: during certain times of the year, under certain conditions, we can use a different species besides *Ampelisca*. How do we define those in a well defined and concrete manner, such that this year the winter may be too harsh and next year it's not. I think we need more flexibility to go so far as to say that maybe we need to have the choice of amphipods and maybe the labs know best which year is going to work for them by their own practical experience.

Norm: In all fairness, I think they're wrestling with this issue right now, and I don't think we're in any position to talk about "what if?" I do believe, as *leptocheirus* becomes used more and more often, the data base increases, and we get a good look at the relative sensitivities, it may very well become the species of choice. We are evolving.

Jim T.: Yes, but in the meantime, the contract labs have to live with what's mandated. And as scientists, we can all sit around the table and talk about how this is an art, and every lab's going to do it a little differently. We all know that when we go from the EPA labs to the commercial labs that there is a transfer of technology that has to take place, and sometimes that's smooth, and sometimes it's not. And while we're fortunate to have a couple of people who sit on the ASTM subcommittee that develops these methods, and are members of SETAC and participate in these professional discussions, there are a lot of labs out there, probably 350-400 labs that do bioassay testing, and some number of those try to do dredge sediment testing, and you're going to have labs that ~~our~~ are going to be trying to do these tests, that may not have the expertise that Scott does, and the expertise that Chris does. And you need to have things that are somewhat cookie cutter, so that they can be done consistently and reproducibly and reliably, regardless of who does them. There are a lot of other labs, besides us, who do these.

Norm: I think we have to go beyond that. I do believe we have to develop a performance-based process. Not every lab can do, and should do this test. I think the clients must be aware of this, select the laboratories carefully. It's a very expensive game to play in which, you know better than anybody, and I don't see us developing cookie cutter methods. I don't see, as my dear friend Dick Petticord use to say, "Acme Welding and Bioassay," is a suitable company to take the client's money. I think people have to be smart in selecting labs. There has to be some kind of performance-based system in place, and it is ________, but that's what makes it competitive.

Alex: We haven't, you know, talked about any specific requirements or demonstrations in our draft, our letter that we've been putting together. One of the factors

involved in this overall issue is that, if you have an organism that one or more labs has a preference in running, but which may not be the most suitable from the regional standpoint, there would have to be some kind of a balance of that issue. So that from the standpoint of how tight a demonstration program or requirements might have to be in terms of when, or when not, to use certain tests would balance out that issue in terms of, someone might not like to do *Ampelisca* if they're having problems, they may not want to do it, they may not like to do it, at the same time we know other programs are using it, status and trends program for example, so that the issue of -- we'd like to get that comparability. We're all testing sediments. We don't want to compare apples to oranges if we don't have to, if we have to go to, if there are real reasons, good reasons, why we should have changes? We would be open to allow that, but there is a real consideration here in terms of what organism and what kind of weighing factors should go into what particular organism would be used.

Jim T.: I'm really not trying to put words in your mouth, in any sense, except to help you understand from our perspective that, you know, we're certainly not the best lab in the nation, nor do we represent ourselves to be, but we've got some pretty decent, qualified people here, and we've had success in running these tests and at times have had problems. We've got some people who are plugged into the scientific dialogue, and if we can't get all of the information we need to run these tests successfully, consistently, then I think there are going to be very few labs that are going to be able to that. I think you need to take that into consideration in making your final decision, that is, that you give the labs a range of tests to choose from such that they can run these tests, because its expensive, as you know. And if these people have to pay for repeat testing -- in the past, it has been that if you ran a test two times, or five times, or one time, you get paid once for it, but with some of these test species that are so complex or sophisticated in terms of running these methods, that we're to the point that we're charging if we have to run it a second time or third, they get charged for it, and that charge is being passed on. So there's that economic consideration, as well. So that's all I'm trying to help you understand. That's a concern of mine, given where I see us at and the type of work that we do here. I do think that we do need to have some flexibility to choose the organisms, as long as they come from a list that are recommended and suggested and appropriate.

Alex: Your priority is more in the flexibility of the organism, or the flexibility in how any results might be received.

Jim T.: I'll ask Scott to answer that question, as well, but my feeling is the organism. We don't care what the test results are, we really don't. We run a test, the organisms die because the sediments are toxic....

Scott: But that's not what he's asking, I think I can answer the question. I can understand and sympathize with what you're trying to say, that you'll like to try and develop a database that is comparable to other work that's being done, so that, you have some consistency across the board, so that eventually, if we go to *Leptocheirus*, maybe we do the whole EMAP program over again with *Lepto's*. That's for you guys to decide.

Norm/Chris: I don't think so.

Scott: But, you need to have some sort of comparability. I don't much mind what organisms we use, as long as I'm comfortable that, as long as I've met my performance-based criteria, that at least 90% of the time, I'm going to be able to obtain organisms that are acceptable for testing and get data that is going to be acceptable to Monte, Lisa, Margo, whoever's reviewing the data. Now, if at certain times of the year, that the acceptable data, quote-unquote, 90% control survival drops based upon the organisms, not based upon the lab, based on the organism, and you have data sets with say, 85% control survival, you've got some kind of reference survival -- and that's a whole other can of worms there --- but you've got 85% test material survival, or you have similar coefficient of variation across, I'd like to see some kind of science built into the test acceptability criteria. You've got your performance-based criteria for the laboratory, so you know whether your laboratory is capable of running the test. So if you get something that's oddball, or different, at different times of the year, that's taken into consideration, that there's some scientific decision making, rather than an accountant's pen decision-making process. I would feel much more comfortable with a scientific dialogue, once you guys feel comfortable with a laboratory, "Certification rears it's ugly head." Once you guys are comfortable with a laboratory, then I would like to see you guys feel comfortable entering into a dialogue about a set of data before it just gets summarily dropped out. Let's sit down and scientifically discuss it. If we think that its passed our criteria for QA, I'd like to discuss that with you. Before we either charge the client to run another test, or repeat the test, I'd like to talk about it with you. I'd like to have that flexibility.

Margo: With the data Jane sent to me, I couldn't tell when these organisms were acquired. I assumed they were purchased organisms and I assume that this represents 1991 and 1992.

Scott: Yes, you've got a very cursory examination of our data. Now in the next couple of months, I'm going to go through our entire data base, which includes the tests that didn't pass.

Margo: This shows 86% survival.

Scott: Right, which would not be acceptable under the current criteria.

Margo: But also in the regional implementation manual, it says that individual control, in a single chamber you cannot exceed or equal 20% mortality and on that basis, that one gets thrown out, this one gets thrown out, this one gets thrown out.

Scott: Yes, but do you think, based on that, that we don't know how to run *Ampelisca* tests? We shouldn't be allowed to run *Ampelisca* tests? Or do you think there might be something going on here?

Margo: That's what I was asking. Did this organism – were they acquired in the dead of winter?

Scott: I need to -- what I want to do -- you and I can sit down and have a nice long talk once I get all of my ducks in a row – I want to go through all of our data, not just what we've submitted. This is just stuff we've submitted. Incidentally, all of these tests were accepted, okay? When I sit down and go through all of our data, which includes all the repeats for each one of these, however many there may be at different times, and find out where the organisms came from, and how long they were held prior to testing, and what time of the year they were tested, and put that all on a sheet for you. Then, I'd like to go over it again. Incidentally, in terms of the lower chamber, this has come into play with a lot of other people I've talked to, that that's probably not a good reason to throw out a test. It might be a good reason to drop that chamber out, and maybe there's scientific evidence to suggest that the lowest chamber, and whatever you do for the controls, you have to do for the test. You might want to throw out the lowest chamber, because this seems to happen to *Ampelisca* a lot, with a lot of different contract labs. Have you guys noticed that? You get one chamber that's an oddball.

Margo: What would be the frequency? You need to have a statistical record of that.

Scott: You get a 19, 18, 19, 14. A couple of other labs....

Chris: I'm sure that occurs, but I couldn't comment on the frequency. I would hazard a guess that it wasn't a routine occurrence, though.

Scott: That's not what I find. And you don't see that at all? Well, it'll be interesting to see if there's any....

Jim F.: Well, not exclusively, but I can't recall it.

Scott: Well, there seems to be other labs out there that have experienced this same difficulty, and the data base that I'm commenting upon is a several hundred test data base, maybe even larger than that. I may be able to get a hold of several hundred tests. Other laboratories may not want to cooperate. We'll see when I get the whole data base. Just to put that in a framework for you, we used to state that for the freshwater, that you can't have lower survival in one of the chambers, and Ingersoll changed that. He through it out. He said don't do that, just average them and if you get above 80, for chironomids, especially if you get above 70, just use it. Now you may want to make caveats. In other words, when you go and do your data analysis, you change your data analysis, you may take out those chambers and ______ if you get a different answer. Actually, be a scientist when it comes to looking at your data, like you would from a research project, rather than looking at it strictly from a cookie cutter mode. But, he said that he did not think that was appropriate and, in fact, in this book (ASTM) here, this was changed.

Norm: I would agree with Chris.

Scott: Chris, here, Chris Ingersoll, this (ASTM) was changed for the freshwater version. The latest update of the freshwater guidance, he took it out, you just average them all and it doesn't say anything about the beakers and you'll notice, you (SAIC's draft EPA guidance) don't have it either.

Chris: Right.

Alex: Just as a general observation, and not anything specifically regarding any QA question, we've always considered the total data base of results that we get for any particular project to be, it's not just one particular test that we necessarily will look at and say "ah ha - it's out!" That's why we run two organisms. Besides two amphipods, we run *mysid* shrimp, we used to run three, and the specific results that are achieved. Now, obviously, we have to discuss with our QA people, these kind of issues, and the district, it's their manual. And I know when you guys see a manual come out from the federal agencies, it strikes the fear of God into you, in that this is what you have to do.

Scott: Well, a lot of times that's what we are held to. And that's what we get paid by. Like it or not, I can sit here and be as much of a scientist as I'd like to think of myself as, but it does come down to whether or not I'm going to get paid, because that's what pays the bills here, that's what keeps me -- I'm able to pay my mortgage and feed my family. It does, I got to have some, either assurance that I'm going to able to sit down and debate, and if you prove me wrong, I'll be gracious about it, but I'd like to be able to debate the acceptability of a test and I like hearing what you're saying. I'm hearing it from a lot more people -- weight of evidence, weight of evidence, and you guys mention that in here specifically. Don't look at one test and throw out the whole study. And that, I know, is a big issue for you guys. Now there have been some people who have suggested, let's do *Ampelisca* testing, and if the *Ampelisca* test doesn't pass, you don't even bother doing any of the rest of them.

Jim T.: I'll go further than that. I have clients, who, one way or another, have that information and they're scared to death because if they fail their *Ampelisca* test, they feel they're never going to get a permit at all. Period. I don't know whether that's accurate, but I'd like to know whether it is or it isn't, so I can correct a misperception, if that's the case.

Monte: No, well, historically, when we assess these results, if one facet of the tests fails, then the project fails. For example, if they were running -- what we used to do is run three different organisms. If one of those organisms failed, and the other two were 100% survival in the test, that project would still fail. Similarly, if one of the organisms had a bioaccumulation problem, just one, not the best out of three, but just one, then that project would need to be capped. Maybe the region and the district have to reassess how we analyze data and make decisions on that data.

Alex: Yeah, there's a lot more information there. I think what we're saying, the reasoning behind that, probably was so few, you know, test results that we saw did fail and when we had sediments that actually killed the *Paleomentes*, we said wow. Now we've got sensitive organisms more than one test, and it's a different circumstance.

Monte: What you're talking about is kind of a screening we've developed because right now, if one organism fails the toxicity test, that sediment can't go to the ocean. Period. It's category III. But the screening, some applicants have been told, the way we assess data now is if that one fails, that's it. So, rather than spend $100,000 doing the testing, spend $20,000. Do this one test, because that's going to be the make or break.

Jim T.: I must have misunderstood. I thought I just heard Alex say that it is important to look at not just a single test, but at several tests, when you make a decision. The project shouldn't fail based upon one test. But you're saying that the project can fail based upon one test.

Alex: I didn't say that it couldn't fail based upon one test, but you look at all of the information, including the information on the failed test and the circumstances that surrounded that test.

Norm: From a cost effectiveness prospect, when you're dealing with a contaminated, sediment, it makes a lot more sense to run a 10-day amphipod test before you spend the money on bioaccumulation.

Jim T.: I don't have any arguments with that.

Norm: And the way that I interpret – the regional approach right now is if you have significant toxicity compared to reference material, you have category III material.

Jim T,: With any single species?

?: Correct.

Norm: You can test 10 of them. If any one of them is acutely toxic, because the intent of the _______ is to identify sediments that are acutely toxic to appropriately sensitive organisms. Theoretically, all the animals we are testing are appropriate sensitive organisms. My opinion, you don't need to test three. I could see testing one. Personally, I've always felt this way. I think you just confound the issue with a host of animals.

Monte: Which one do you use? That's the question.

Norm: I think you use *Ampelisca* most of the year. Why do I say *Ampelisca*? Because we know it's a -- we've had good success with that test. We have a warm, fuzzy feeling about that animal. You get good, consistent results. You have a data base

that shows a greater response to the sediment. We have the EMAP data base that shows the results from Cape Hatteras to Cape Cod, and now we're using it in the Arcadia province, and the Carolinian province. It's another stats and trend indicator. We've used it in the Gulf of Mexico, we've used it as a validation test for sediment quality criteria development. We've got lots of data. We know if you take a series of dilutions of sediments and run this animal, you get a greater response. That work has been done.

Scott: What about the Round Robin?

Norm: That's coming up. What about it?

Scott: I think that that's going to be real interesting. I'd like to see a few more contract labs in there. I know you guys have a cost issue. If I could find labs that are willing to do it....

Chris: For free?

Scott: Get the organism and do it for free?

Chris: It's illegal to have a contract lab do something....

Scott: I think the contract labs are the ones that have had some of these experiences, and I'm not talking about fly-by-night labs, we all know where those are. I don't think you guys consider us one. I don't think the S.P. Houston is considered one. Battelle has had problems running this test and I don't think they are considered a fly-by-night. So let's get some of the....

Monte: They better not be.

Scott: And they've had problems, right?

Monte: Yes, early on.

Norm: I think we have to do a better job of technology transfer. I think we need some kind of performance-based criteria. This is not a simple test to run. It really isn't.

Alex: If there is information out there in the labs, as you alluded to, Scott, then I think we have to look at these issues regarding acceptability guidelines, and so forth. Personally, I would prefer looking at it in that end, at least having more of a focus in that end, than large focus in a complete switch in organisms. Because I think – that goes back to the letter that Norm alluded to before.

Alex: In the regulatory world, we have a few more levels of sign-off, than the research world, that have to be dealt with before things get out. So I don't know what will end up coming out, but, I think one concern is going to be obviously, if there

are any switches or controls on the organism, then obviously labs will probably end up doing what they are most comfortable doing, all the time, not only just during whatever time may or may not be appropriate. So that's an issue.

Norm: I've got to reinforce what Alex is saying. Speaking from more of a research perspective, the regulatory business comes out of the regions and the districts, and that's the reality.

Scott: The wheels are turning on that. I spoke to Diane yesterday and she's going to start getting some data. I've put together a data form for collection of data from the other contract labs. John Brezina is going to help out. We're going to put something together. So, hopefully, in a few months here, depending how cooperative the various other contract labs are, you know, we tend to be a rather _________ lot, we don't like to talk about what doesn't work, we like to pretend none of it ever existed. I think there's enough interest in this particular issue that I'm going to get a reasonable amount of cooperation. Having John involved as the point man to keep everybody's data confidential, that we'll be able to get something out, let's say in six months or SETAC time, as a discussion of this issue, using a broad base of data. So, hopefully, that will give you guys -- are dealing with six months from now that we're going to hear that. That doesn't give you guys any time. It's probably going to take three months to collect and synthesize the data and another three months to get it in the journal. That's all dependent on, as any of you with a prior publication record know, the journal sort of -- getting it in is kind of a catch as catch can, and how long its going to take.

Monte: But from a regulatory standpoint, it would seem you'd want to use a white rat organism that has as few idiosyncracies as possible and will give you as few confounding results as possible. And right now, *Ampelisca* does not seem to be that organism, and that is essentially how the Corps has felt for the past two or three years, which is why the manual says two amphipods, and that's the crux of the problem, not that -- some people will say that it's failing everything, but that's not really it. It's that you have an organism where one day I hear there is a problem, because it's grain-size sensitive, then the next day I hear that it dies after mating. Now we're hearing that there's a difference between the winter and summer populations. The organisms are too big. It just seems that there's a list of reasons or as I said, idiosyncracies where you would say, wait a second, we want to use an organism that you can use, but not so much, like you said, Norm, this is not a simple test to run and I don't necessarily say it should be a simple test to run, but it should be a test where you have clear protocols and as few outside influences as possible. I guess, right now, I don't understand that this is the organism that fits that criteria.

Norm: I think it does, actually.

Chris: I think it does.

Norm: Our experience with the animal -- I would say yes to the list you just rattled off. This is the first real evidence of a seasonal effect that I'm aware of. The grain size issues, those have been dealt with a long, long time ago. The ammonia issue

came up. Was that foreseen? No. That would effect any of the animals. I'm comfortable that *Ampelisca* does serve as a good model. Now, are there better animals? Will there be better animals? My feeling right now is as *Leptocheirus* gets developed and used, it's always preferential to have a culturable species. We all see the utility of that, and as we see that the animal produces reproducible results, that is amenable to culturing and handling. A year from now, or two years from now, we'll be sitting around the table saying *Leptocheirus* should be the white rate. We'll find out as we use it.

***Monte*:** I don't doubt....

***Norm*:** For the time being, here's the kicker, and I don't have to tell you this because you live with it every day. We have to make decisions now, yesterday, immediately, and what we're often forced into is using what we call the best available technology, and for sediment and dredge material evaluation the consensus is, at least among the scientific community, that *Ampelisca* represents the best available technology for acute toxicity testing. And that's where we're at right now. We're not here to make your life difficult. If anything, we work to try to make these tests as user friendly as possible.

***Jim T.*:** I would like to respond to your question, as well. We've heard an EPA research response to it, and I can appreciate it, and I guess I'm looking at Alex as I speak because the decision is ultimately going to come out of the office over there, but, and, I guess, Scott, I'd like your input because you've been speaking with the labs more recently than I have, but I think from a commercial lab's standpoint, and again reiterating that I think we have some number of reasonable qualified people that have connections, can talk with people, and to try to sort out what needs to be done, and to try to fine tune this art, to get the test to run. These are some idiosyncracies about this test that makes it more difficult on average to run, and I don't think -- I think because of that, that it may not be the white rat type of test that Monte's referring to. I think that there could be other organisms, whether it's *Leptocheirus* or some other species, I don't know. My perspective is a little different, and I would guess that the other labs, because we have been speaking with them and they have encountered some problems, as well, that you would get a similar response from them, that they would have a preferred organism.

***Norm*:** What would you use instead?

***Jim T.*:** I'm not qualified to say, Norm.

***Norm*:** That gets back to my point of having to make decisions today, and having to go with the best available methods today. I think, more than any other reason, that's why we're using *Ampelisca* today.

***Jim T.*:** Well, what about these on the list, *Eo's* and *Rhepox*? The other two, as I understand in speaking with Scott, are pretty esoteric species.

Norm: *Rhepox* is used extensively

Scott: No, the other two - *Corophium* and *Grandiderella*. There's a fairly limited data base on these two. But, the *Eo's* and *Rhepox* have a big data base. We've run hundreds of *EO's*. In fact, we ran hundreds of them, having had no previous experience and we have never – I think we've run over 300 different samples for *Eohaustorius* and we have one test, and it wasn't even a New York bight test, it was a Connecticut test that failed the performance criteria. That just makes me all warm and fuzzy. I just love *Eohaustorius*, but then again, I love *C. tentans*.

Norm: You got to realize you've got Regional preferences and regional white rats, you go out to the West Coast and they're using *Rhepox*.

Scott: They have different grain sizes out there.

Norm: If you go to the Chesapeake, they're using *Leptocheirus*. New York has made a decision to go with *Ampelisca*.

Chris: And Boston and Galveston.

Jim T.: Boston does have some flexibility in their control survival criteria, though, because we've done some projects up there. I don't remember what it was, but I know it was below 90% in both cases, and they took the data.

Alex: Well, I think that's something we need to look at.

Scott: Just for scientific reasons, no business reasons, for scientific reasons and my own curiosity, and having counterparts in other laboratories express interest in this issue, and having called me up and say, "so how do you guys do this," and "what do you do here, what do you do there?" These are the types of things that go on with my counterparts in other laboratories. I want to get this data base together and see if there is a trend. I think if there is a statistical trend at a certain time of the year, I think that you guys need to take that into consideration. The fact that its never been seen before, doesn't mean that it doesn't necessarily exist. If it's not this, there is nothing to report, but if it is there, we owe to the science to at least consider the possibility that there might be different seasonal sensitivity. I know that the people in this area, the people that we service, now we're talking the industry people, are saying "enough," that if they pick up on anything like that, or if they think that there's a chance that they're going to get a permit doing a test one time of the year as opposed to another, or switching anything, they're going to do it. And they're going to find out about it, whether we tell them, or they read about it in the literature. Business people, most of them have environmental coordinators. They are aware of these issues.

Chris: I would hazard to guess that, if you did determine that there was a statistically significant trend in the temporal sensitivity.

(Tape ran out - turned to other side after some delay.)

Side 2 of Tape

Norm: After a while, you know that the animal considers this sediment its home, it's happy. And once you've solved that problem, that's half the problem with control survival.

Scott: We're not given the latitude to develop that in a lot of cases. We had to argue real hard to get control sediment away from Milton Harbor. Not for the new guidance, but there are issues within that, that the contract labs don't have the latitude to change, and you guys do.

Chris: I don't see a constraint on control sediment. Do you?

Monte: There is none.

Scott: There isn't.

Norm: I think that's going to help a lot, knowing that you've got a sediment that the animals absolutely love.

Monte: I think it was excessive mortality, and we haven't defined excessive mortality.

Scott: Yeah, that's right, that gave me the heebie-geebies. What is excessive mortality? Because I know that in the *Ampelisca* tests that we've run – you get a Sandy Hook sample that's got a lot of organic matter in it and they'll do fine, but if there's no organic matter, or if it's rinsed out, you won't find any.

Norm: That's why, I think, in time, with the right people and the right smarts, you'll get better and better at doing these tests.

Alex: We have people that need to catch trains.

?: I think that was helpful – I don't know how much....

Norm: Do you think this was helpful?

Jim T.: I think, I feel that you guys have perhaps a little bit of a broader perspective of what a contract lab's approach is to this, and the problem that we're encountering, and the issues revolving around technology transfer, and hopefully, we will see some of these comments taken into account when this letter that's being talked about comes out. We'll see some greater flexibility. Based upon our own personal experience, eand knowing the quality of our lab, I don't think we're the best, by any means, but I think we do a respectable job here, and we've had a difficult time getting *Ampelisca* to pass, and we're going to get better at this, but there are other labs, who are still qualified labs, who are going to be doing this and are going to have more problems than we are. We need to have some more flexibility built in, such that it's easier for us to have an acceptable data set. It's

one thing to say when you've got 10% test survival and 85% control survival, don't worry about running it again. But if you have 85% in the controls and 80% in the test, you're going say, you've got to run that test again, and that's probably a good data set, but it doesn't meet your quality control criteria. There are other species, whether its *Eo's* or *Rhepox*, which we have experience here that we don't have problems with the control like we do with *Ampelisca* right now.

Scott: What comes to mind is the $40,000 shrimp. It's for Monte, and maybe for Alex. There was a time when we had a data set. I'm sure you remember this because it was the first time we talked on the phone, we ran *paleo's*. I think it was Flushing Bay, and 89.7% survival in the controls, one shrimp shy of passing and for the test, we had to go resample and do all of the chemical analysis over again. I don't remember who forced this issue, but we did talk about it on the phone. It was about four years ago. Now, at a cost to the laboratory of about $40,000. I'd like to avoid those situations, if at all possible. That, I think, when it comes down to that, it is the issue we're tying to put forth here.

Monte: I know you guys have to rush out.

Norm: I would have been giving mouth-to-mouth resuscitation all night long.

Monte: I know you guys have to rush, but one of the main reasons we called this meeting was not because of the failure so much, but because of this business of having of the *Ampelisca* too big for this winter generation. So have we come to some kind of conclusion on that? What I have here is that the availability of approximately mature *Ampelisca* is questionable during winter months. Is that something that....

Scott: As far as I know, we've got enough juveniles right now. We'll wait until we get to the end of the acclimation period, where they are, and if we're at the same situation. Maybe we've got new data for you guys. Well have to see what happens.

Jim F.: Did you have a good idea last time? I take it you sieved some more when you got back to the laboratory.

Scott: That's where you need Joe. I know what happened this time. What happened last time in terms of whether they were looked at, they told me that when they came back that they had the animals they needed. You needed Joe here to answer the questions in terms of what percent they....

Monte: You're shaking your head a lot.

Chris: I know that the -- now was this a condition representative for all of the collection sites that you....

Scott: The one that the animals were the largest in, and the most, they were the healthiest, but the greatest proportion of sexually mature adults was Narragansett.

Chris: Okay. Now that same supplier has, throughout the winter, supplied organisms to other laboratories that have conducted tests from the same source and to my knowledge, he has not, nobody has responded with this similar problem.

Scott: But did they hold them for 17 days?

Chris: No. I don't think you would ever want to hold them for 17 days.

Scott: But that's the situation we were in.

Chris: That might be appropriate, that one comment that you have. I think the evidence, based on this, from what this supplier can say, he's been out all winter collecting amphipods, and he's getting them to contract labs who have been conducting these tests.

Jim T.: Chris, the other side of that though is if you have them shipped into labs, and 99.9% of the people do, they're probably going to come in at 15°, 16°, because they're going to come up in temperature. We had someone drive up there and pick them up, and so they were held at the exact same temperature. When you have them down at 1/2 to 1°C and then you only bring them up 2°C to 3°C per day, you're going to hold them for a lot longer period of time. If someone gets them in at 15°C, most labs try to test as soon as they can because they feel that these are somewhat sensitive organisms, and the longer they hold them, the more problems they're going to run into, so they go into a test right away. So, the SOP we have written and trying to follow some of the older SOP's you have, when you go through a slower acclimation over a longer period of time, you're going to have a greater chance of running into the problem.

Jim F.: I think we're trying to say that 17 may be too much, but....

Scott/Norm: Trying to get the ammonia level down.

Norm: You have to decouple it. As you know, as you gain a little experience, measure your ammonia, and it takes you 2-3 days to purge or 4 days or 5, or a week, you've got to stagger your collection.

Scott: But, we tried to do that. That's what we've done this time. I don't think you guys have run into this, or should have run into this. I doubt Norm would have even conceived of this purging thing. You know, it's probably not an issue that can really be addressed, as if there's this huge data base to show that this is what you do under these circumstances. It's probably the first time that anyone tried to do it and these are the problems we ran into. I know that other labs, this time of the year, do have problems running this test, whether we all want to admit to that or not, it doesn't matter. I have had people tell me that. I don't think they're lying to me. And I have an organism supplier who says that at this time of the year, he does have problems finding the animals, and he does have problems, with his contract people getting the test to pass.

Norm: We've been around this a couple of times. If, in fact, the region and district come to agreement on *Leptocheirus*, the second issue will be a non-problem, and it looks like that's what's going to happen.

Alex: And I believe you guys are putting together an information base, based upon the conference call that we had. Monte wasn't in that, but John Tavalaro....

?: The partnering meeting?

Alex: Yes.

Monte: I was there. I came in -- I hid in the back.

Scott: Was that the conference call that Ken and _______?

Alex: At Port Newark.

Alex: Wasn't one of the things that came out of that, that you guys were going to provide documentation as to the problem. What I'm alluding to is just the fact that regarding these points that you brought up, obviously included in this would be any specific data that you've seen from around the country.

Scott: Oh, that's going to take a little longer time. Like I said, I want to get, I can give you conversations. I think I listed a couple in here, with some people, some very basic -- this is the thing that I sent to you, the preliminary report.

Monte: The thing you faxed?

Scott: Yes, this is our preliminary report on this project. I don't know if you can see this or not. I thought you had a copy of it, but your welcome to this if you want to have it. That....

Monte: I didn't even see the letter, actually.

Scott: I'd like to get some more information, some actual data, rather than sitting down and talking over the phone with a lot of these people, which I allude to in that report, but to actually get some data, and I'm working on it, but it's going to take some time.

Alex: But so far, you haven't run any real project testing where you have data on. You just have developed this developmental test that we're still reviewing and you've seen some problems?

Jim T.: No, we have run project data as early as 1991 with this particular species, and what I'm telling you is based upon our experience and we've had some successful tests. But, we've run a lot of duplicate and triplicate tests to get a single test to pass, meaning to meet the 90% criteria. Our experience is the *Eo's* and *Rhepox* which are two of the species on that list, are a lot easier for us to meet the QC requirements than it is with *Ampelisca*. We can say that with our eyes closed.

Now with *Ampelisca*, maybe there is a learning curve there, and certainly, we've come up the curve the last couple of weeks. Again, I think you've got other labs that are going to be running these tests, that are not fly-by-night, that are going to have to go through this learning curve too, and I think there will continue to be a problem for other labs as they come up this learning curve. It's basically an art. It's not a cookie cutter type of test.

Scott: This goes a long way.

Jim T.: *Eo's* and *Rhepox* would solve that, or maybe *Lepto's* will solve that if it's a culturable organism.

(Multiple simultaneous conversations as meeting ends.)

82-607 0 - 94 - 9

MASSPORT MARITIME DEPARTMENT, EAST BLDG. II, FISH PIER,
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massport

July 28, 1994

The Honorable Solomon P. Ortiz
Chairman
Subcommittee on Oceanography, Gulf of Mexico, and the
Outer Continental Shelf
Committee on Merchant Marine and Fisheries
U.S. House of Representatives
Room 1334
Longworth House Office Building
Washington, DC 20515-6230

Dear Congressman Ortiz:

Thank you again for the opportunity to testify before the Subcommittee on Oceanography, Gulf of Mexico, and the Outer Continental Shelf (June 14, 1994). On behalf of the Massachusetts Port Authority, we welcomed the opportunity to tell the port's side of the dredging story.

In response to your letter of June 23, 1994, I am providing responses to the questions you submitted. Responses are attached. I hope this information is helpful to you and to the Subcommittee as you focus on solutions to the nationwide dredging and dredged material disposal problems.

If the Massachusetts Port Authority can be of further assistance to you, please do not hesitate to contact us.

Sincerely yours,

Janeen S. Hansen

Janeen S. Hansen
Project Manager

Attachment (6 pages)

massport

Question 1: What are the general costs to complete the permit application process? What percent of the total project are these costs?

Response: Massport's Environmental Consultant estimates that an additional $600,000 is needed to respond to comments to the draft Environmental Impact Report/Statement (DEIR/S) and prepare the necessary permit applications. This amount is in addition to Massport's expenditure of $848,515 for sediment testing and analysis, development of site selection criteria, screening of over 300 possible disposal sites, and preparation of the DEIR/S. Further, it does not include the cost of time spent by Massport staff and outside counsel, nor does it include expenses incurred by the U.S. Army Corps of Engineers for their DEIS portion of the DEIR/S.

Current estimates of the project cost are approximately $33 million, assuming ocean disposal of all of the dredged material. Since ocean disposal of all of the material seems highly unlikely, it is probable that the total project cost is in excess of $33 million. It is impossible to know, at this time, how much in excess of $33 million since we do not yet have an acceptable disposal site or sites identified.

Therefore, at a minimum, the permit application process for the Boston Harbor project will be $1.5 million (non-Federal share) out of $33 million for the total project, or at least 4.5 percent.

massport

Question 2: If Massport's navigation improvement project does not move forward on a timely basis, what will be the impact on your local and regional economy?

Response: The Port of Boston provides jobs for upwards of 9,000 people, directly and indirectly. In 1993, over 17 million tons of cargo passed through our port, worth over $18 billion. The Port of Boston is also the energy lifeline of the New England Region, supplying home heating oil and motor fuel to 1.3 million households, and jet fuel to Logan International Airport, the 10th busiest in the United States.

Fully loaded containerships are calling the Port of Boston drawing more water than ever in our history. In order to reach their berths, these ships frequently must anchor outside the harbor to await a rising tide in order to transit the navigation channels. In April of this year, a ship was delayed in the North Atlantic, due to a storm. As the ship approached Boston, her captain decided to skip its Boston call, rather than wait a 12-hour tide cycle. New England export cargo was left sitting on the dock, eventually to be barged down to New York for loading onto the next outbound vessel. New England importers waited for several days until their Boston-bound cargo could be transported back up to Boston, either by barge, truck or rail. This kind of service is not acceptable on a continuing basis. If Massport and the Corps are not able to dredge Boston Harbor to a competitive depth of 40 feet in a timely fashion, Boston stands to lose its ability to offer international shipping via deep draft vessels.

Many of the 9,000 jobs would disappear, and many New England companies would incur significant additional shipping costs and time delays. The Corps of Engineers has estimated that the cost of "lightering" petroleum cargoes (offloading fuel from tankers to fuel barges at an anchorage) costs end-use consumers approximately 4.5 cents per gallon, or about 4 percent of their total fuel costs.

For all intents and purposes, if Boston Harbor cannot be dredged in a timely manner, we risk becoming an all-barge port, at substantial cost to New England businesses and households.

massport

Question 3: Should the Boston Harbor project be shelved until treatment and management technologies have been fully developed?

Response: No! Treatment technologies offer potential solutions to the long-term problem of dredged material management. Most technologies are still in the developmental stages, however. They are tremendously expensive, well beyond a cost any port could afford on a large scale. Secondly, most treatment technologies have "side effects" which may preclude permitting of the treatment technologies on a large scale. These "side effects" need to be identified, quantified, and managed in an environmentally acceptable way. Third, treatment technologies generally require a lot of physical space at or near pier areas. Most ports in urban areas do not have large amounts of unused open space readily available to treat dredged material. Finally, treatment technologies do not yet have sufficient through-put capacity to meet the needs of even a modest dredging project. Massport believes there ought to be greater incentives for government and business to encourage development and expansion of treatment technologies and maritime backland so that treatment technologies will be affordable, permittable, and doable on a large scale.

If American ports wait until treatment technologies become cost-effective, permittable, and available at a reasonable scale, most port business will have relocated to deeper ports in Canada and Mexico. Containers and bulk commodities such as petroleum will arrive via land bridge (rail or highway) at a significant cost to U.S. companies and consumers.

In addition to the incentives for demonstration projects contained in the "Green Ports" amendment to the defense reauthorization bill, there ought to be other opportunities for developing treatment technologies. Perhaps "joint ventures" should be formed between and among the federal government, state agencies, ports, and environmental interest groups to promote study and implementation of treatment technologies. These partnerships ought to be able to operate on a small scale demonstration basis with waivers of the usual regulatory permit requirements.

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Question 4: Dr Rees in his testimony also stated that the Corps and EPA are working on addressing a number of issues such as improving the consistency and dependability of toxicity tests, revised guidance on the re-evaluation and retesting of sediment, and the establishment of contaminants management thresholds, rather than nationwide standards. Do you feel that the agencies are addressing these issues properly and in a timely manner?

Response: EPA recently dropped the suspended particulate-bioaccumulation test from the list of required tests for dredged material to be disposed at sea. This was an important first step, signaling EPA's willingness to reconsider requirements that were widely recognized to not provide meaningful data. Massport believes there ought to be greater cooperation between the two agencies to determine which tests must be done, the standards that must be met, and the time frame within which permit applications must be acted upon.

massport

QUESTION 5: The Corps of Engineers has stated that they do not expect dredged material disposal volumes to deviate significantly from historic rates and volumes? Do you agree and if there should be deviations, how will this affect current long-term disposal planning efforts?

Response: It has been over 10 years since major dredging occurred anywhere in Boston Harbor. One result of this hiatus in dredging is that much of the material is silty and has been determined to be unsuitable for unconfined ocean disposal. Disposal of dredged material is not just a volume issue. There are also issues of environmental protection, disposal costs, and regulatory compliance.

In Massport's opinion, the Corps of Engineers is the best source of information on rates of siltation and projections of maintenance dredging needs. The only reason to expect a greater rate or volume of dredging, is if the Port of Boston wished to accommodate the next generation of deep draft vessels at, say 42 or 45 feet of water.

Massport is working with the Massachusetts Office of Environmental Affairs to assist in developing long-term disposal plans. The Boston Harbor project will provide guidance on future dredged material disposal.

massport

QUESTION 6: Do you think your problems can be addressed through administrative actions alone or is legislation also required?

Both administrative actions and legislation are required to address the dredging crisis. Specifically, the following legislative action is required:

1. Section 103 of the Marine Protection, Research and Sanctuaries Act, and Section 404 of the Clean Water Act should be amended to provide a single regulatory process for permitting dredging projects. It is imperative that delays due to conflicting and overlapping regulations be eliminated.

2. The Clean Water Act should be amended to consider the needs of commercial navigation on equal footing with the needs of environmental protection.

3. The Water Resources Development Act of 1994 should account for the "benefits" of environmental clean-up, a by-product of many dredging projects, in the same way the present Act accounts for benefits to commercial navigation.

4. The Water Resources Development Act should redefine the cost-share formula to include cost-sharing for ALL disposal options, not just ocean dumping.

5. Congress should approve the "Green Ports" language contained in the House version of the defense reauthorization bill, which would encourage federal participation in assessing and funding decontamination technologies. These technologies offer good potential for long-term solutions to the problem of dredged material management, but more funding and research is needed. Further, the Federal government ought to take the lead in waiving regulatory requirements for small-scale demonstrations projects. Finally, there should be a concomitant commitment to move forward with needed dredging projects while the technologies are being developed. Ports cannot afford to wait for development of large-scale, cost-effective technologies.

PORT OF CORPUS CHRISTI

July 30, 1994

The Honorable Solomon P. Ortiz
Chairman
Subcommittee on Oceanography,
Gulf of Mexico, and the
Outer Continental Shelf
U.S. House of Representatives
Room 1334 Longworth House Office Building
Washington, D.C. 20515 - 6230

Dear Congressman Ortiz:

In response to your request for further information concerning the topic of the impact of the Ocean Dumping Act and Federal dredging policy, attached are my responses to the list of questions provided in your letter of June 23, 1994.

It was my pleasure and honor to be asked to testify at the Subcommittee hearing. Should you have any questions, please do not hesitate to contact me.

Sincerely,

Paul D Carangelo

Paul D. Carangelo, R.E.M.
Coastal Environmental Planner

Enclosure

cc: John LaRue
Frank Brogan
Greg Brubeck
Dipak Desai

Port of Corpus Christi Authority 222 Power Street • P O Box 1541 • Corpus Christi, Texas 78403 • 512-882-5633 • Fax 512-882-7110

Response to Question (1)

In general, a qualified yes. I believe the agencies are addressing these issues in a proper and timely manner and the existing regulations and testing protocols are sufficient. Improvements to contaminants thresholds guidance that has developed and continues to evolve through application of the "Green Book" protocols are appropriate; absolute sediment criteria used on a "pass/fail" basis are inappropriate.

Nationwide standards based on sediment criteria are rarely appropriate even when a contaminant's effect becomes better understood. Such criteria, if established, should be best used as indicators upon which regional or project specific dredged materials management must be tailored.

Response to Question (2)

The overall volumes may not be different but the short and long term disposal capacity (a function of available sites and/or increased costs) is already a problem. There are circumstances where, due to existing or new state and/or federal regulatory policy, long term disposal plans for authorized federal projects are threatened.

Without a clear administrative policy on dredging and dredged material management and the recognition of the environmental and economic costs associated with any policy, current and future (long term) disposal planning efforts will not be wholly reliable.

Response to Question (3)

Both are required. On this matter I refer the Subcommittee to the American Association of Port Authorities (AAPA) white paper on National Dredging Policy ("Open Channels to Trade") which supports a number of administrative and regulatory initiatives, and the AAPA's proposed recommendations to develop a Clean Water Act "Section 406" under the Clean Water Act reauthorizations. Ports have recently contributed to the discussion with the U.S. Legislative Policy Committee Special Task Force on the Harbor Maintenance Trust Fund as well as the Interagency Working Group on the Dredging Process. I am, in general, supportive of proposals like that provided by Menendez at the hearing and believe that the port industry could be similarly supportive.

Response to Question (4)

I can not respond comprehensively given the variety of private and federal projects with unique site and project specific regulatory concerns that effect the range of permitting difficulty. In addition, it is sometimes difficult to separate out the necessary

engineering costs to secure permits from construction engineering costs. However, for both relatively uncomplicated and complex permits (those with associated detailed environmental and engineering studies), permitting costs can range between 2 and 9 percent of total construction cost, with 2 to 6 percent typical. The percent of total is often higher for the smaller projects.

However, time is often the most significant "cost". Uncomplicated permits take up to four months to one year for resolution. Complicated new work proposals or authorized project maintenance dredging disposal (with disputes) take typically 3 to as much as 6 years to permit. There are opportunity costs to factor as well as the issue of affordability and available funding. You may recall that it took the Port of Oakland 24 years to solve its dredging problem which was accomplished with the active involvement of the current Administration and policy innovation in cost sharing.

Response to Question (5)

It is my personal view that, yes, aside from sites of known and historic contamination, the volume of dredged material "considered" to be contaminated is rising. It is my opinion that where actual increases can be attributed to uncontrolled sources, it is increasing; however, continued improvements in analytical technology that detect trace compounds at lower and lower levels also plays a role. Also, the volume of material considered to be contaminated can be a function of media attention and subsequent public reaction which, in the absence of scientific "certainty" on the effects of minute levels of these compounds on ecological or human health, may result in the general public perception that contaminated material volumes are rising - independent of matters of risk.

Questions for Mr. Carangelo

1) Dr. Rees in his testimony also stated that the Corps and EPA are working on addressing a number of issues such as improving the consistency and dependability of toxicity tests, revised guidance on the re-evaluation and retesting of sediment, and the establishment of contaminants management thresholds, rather than nationwide standards. Do you feel that the agencies are addressing these issues properly and in a timely manner?

2) The Corps of Engineers has stated that they do not expect dredged material disposal volumes to deviate significantly from historic rates and volumes? Do you agree and if there should be deviations, how will this effect current long-term disposal planning efforts?

3) Do you think your problems can be addressed through administrative actions alone or is legislation also required?

4) What are the general costs to complete the permit application process? What percent of the total project are these costs?

5) Do you feel that the volume of dredge material considered to be contaminated is rising? Do you feel that this increase is due to actual increases in contaminating activity or to the development and employment of more accurate and precise testing methods which are being used to detect a broader range of potential contaminants?

Response to Questions from the
Subcommittee on Oceanography, Gulf of Mexico,
and the Outer Continental Shelf

Request Dated: June 23, 1994

Response by: Joseph D. Germano, Ph.D.
Science Applications International Corporation
221 Third Street
Newport, RI 02840

QUESTION 1: *Why is only thirty percent of all dredged material disposed of in marine environments? Are upland disposal sites better than aquatic disposal sites at preventing the migration of contaminants in dredge material?*

RESPONSE:

The cited figure of 30% came from the Army Corps of Engineers Procedural Guide for Dredged Material Disposal Site Designation (Pequegnat et al., 1990, page 1); it is important to note that this does not represent the total for in-water (aquatic) disposal, just the portion that goes to marine (open-ocean or estuarine) disposal sites. Dredging and disposal alternatives vary from one region of the country to another, depending on regional environmental concerns and economics. Geographic regions with intense land use pressures and high real estate values depend on aquatic disposal alternatives for dredged material management; in other regions where suitable upland acreage is more readily available and relatively less expensive, then disposal in a land-based containment area may be the most commonly used disposal alternative. Because the majority of material dredged is classified as clean sediments, on a national scale the main driving factor behind the selection of a final disposal alternative is cost, and aquatic disposal is by far the least expensive disposal alternative.

A survey done for EPA within the last year of 19 of the 30 Corps of Engineers District offices that have assigned responsibility under the Corps' mission to maintain the navigability of the nation's waterways showed that for the five years between 1987 - 1991, an average of 300 million cubic yards were disposed. Assuming that there was approximately the same annual total in 1992 (the most recent data available at the time of the survey), the 19 districts surveyed handled approximately 59% of the estimated annual volume. Of this total, 90% of it (159 million cubic yards) was managed with in-water disposal. If the trend shown for the two-thirds of the Corps districts surveyed is consistent for the remaining third who were not polled in this study, recent data support the conclusion that aquatic disposal is the most frequently

chosen disposal alternative. There are a great many dredging projects taking place in inland rivers, waterways, and the Great Lakes that still use aquatic disposal; the 30% of the national total that is disposed in the marine environment would only come from coastal Corps districts.

In response to the question about upland sites being better than aquatic disposal sites at preventing the migration of contaminants, I would like to express the points made on page 10 of my original written testimony as well as emphasize the difference between the kinetics of contaminant migration in a salt-water vs. fresh-water environment. I also wish to emphasize that in the discussion below, I am referring to the second category of dredged material in my classification scheme on page one of my original testimony (material that is classified as "contaminated" but is not a dangerous or hazardous waste by federal or state standards); the small volume of material that truly is classified as hazardous waste is handled most effectively (as far as preventing contaminant migration) by remediation technologies.

Many state and federal policies that attempt to curb pollution in freshwater and marine environments have indirectly encouraged dredged material disposal in upland containment areas. Unfortunately, this option is not always the most environmentally safe, especially for contaminated sediments from marine environments (Gambrell et al., 1978); in a salt-water environment, the majority of trace metal and organic contaminants are bound tightly to the sediment particles because of chemical conditions of the environment (factors such as pH, lack of oxygen, ionic charge of the salt-water environment). To contain contaminants in a marine environment, all that usually needs to take place is to isolate or contain the sediment, because the contaminants stay bound to the sediment particles (they do not leach out to any appreciable degree to the surrounding water). Isolating the sediment is done most effectively with properly-designed confined aquatic disposal options. When contaminated sediments from a salt-water environment are taken out of the water and brought to an upland site where they are exposed to air (oxygen) and rain (fresh water), the pH will change, the sediment will get oxidized, the fresh water will wash out the salt, and the contaminants will no longer stay bound to the sedimentary particles: they will be mobilized and leach out from the site through any available transport pathway, and the ground water supply in the area is exposed to potential contaminant transfer as well as salt-water intrusion. To my knowledge, no one has yet built a leak-proof, upland containment site with an unqualified guarantee against future failure (e.g., a design life of 1,000 years or more). I view placement of contaminated sediments in upland containment sites as a short-term, interim solution. When contaminated sediments are placed in upland disposal sites, and society assumes that this has finally and effectively "isolated" any contaminants of concern, I feel that all we have really accomplished is a guarantee that we will eventually contaminate our groundwater supply. With properly designed confined aquatic (marine) disposal strategies, contaminant isolation can not only be effective, but the risk for ground water contamination or salt-water intrusion to aquifers is completely eliminated,

because the disposal design is not fighting gravity.

Fresh-water aquatic disposal sites do not have the same chemical characteristics as marine aquatic disposal sites. There is a whole different set of environmental conditions for issues concerning contaminant isolation and migration; because of varying pH conditions and the lack of a surrounding ionic solution for the sediment, it is quite common for sediment-associated contaminants in a fresh water environments to leach out into the surrounding aquatic environment at a steady rate and therefore be a major source for the soluble contaminant load in a river or lake. Confined aquatic disposal in a fresh water environment will most likely be associated with a higher amount of risk (i.e, may not necessarily be as effective) as confined aquatic disposal in a marine environment. It is difficult to state any hard and fast generalizations in an unequivocal manner about whether fresh-water confined aquatic disposal is better than an upland disposal site at preventing the migration of contaminants; the relative risks would have to be evaluated on a case by case basis.

QUESTION 2: *Do you feel that the volume of dredge material considered to be contaminated is rising? Do you feel that this increase is due to actual increases in contaminating activity or to the development and employment of more accurate and precise testing methods which are being used to detect a broader range of potential contaminants?*

RESPONSE:

Yes, the apparent trend is that the volume of contaminated material is rising. As the second question indicates, there are two possible explanations for this conclusion: is this because the contaminant load is increasing (i.e., there is more contaminated sediment around then there was in the past) or is it because more sensitive testing methods are being used (i.e., material that would have been considered "clean" in the past is now classified as "contaminated" because of revised testing protocols or regulatory standards)?

It is easier to make a definite statement about the latter half of the second question, and the answer to that is also an unqualified "yes". The chemical state of the art has definitely advanced over the past decade; where it formerly was routine to measure contaminants in the parts per million (ppm) level, they are now measured in the parts per billion (ppb) or parts per trillion (ppt) level. However, there is a very important distinction between being able to measure the contaminant level in a sediment and being able to determine if that level is harmful to an organism (i.e., is the contaminant bioavailable to the degree that it will cause harm or damage?). We are still a long way from being able to state unequivocally for all contaminants that a particular level in a sediment will or will not cause harm to organisms (there are some

notable exceptions like methyl-mercury). Effects-based testing (sediment toxicity tests using laboratory bioassay and bioaccumulation testing protocols) are the best available technology at the present, and when properly employed, these effects-based test results are most often interpreted with the "better to err on the safe side" approach, which I feel is appropriate given our current state of knowledge. Revised effects-based testing protocols using more sensitive species are now incorporated in testing guidance that has recently been issued to all Corps of Engineers district offices.

It is difficult to make any sweeping statements on a national level about whether or not the source inputs to the sediments (contaminating activities) are increasing, decreasing, or staying about the same as far as their causal relationship to the apparent increasing trend in the volume of contaminated sediments. My qualitative feeling is that contaminating activity is generally on the decrease as a result of legislation such as the Clean Water and Clean Air acts, and conditions are slowly improving. Recent events such as the appearance once more of wood-boring mollusks destroying the pilings of piers in New York Harbor (while again presenting a nuisance to human economic plans) are clear indications of improving water quality (the problem had been eliminated for the past 4-5 decades because water quality in New York Harbor was so poor that all these animals had been killed off).

It is much easier to gather data on individual contaminants of concern from specific areas of the country from regional or national monitoring programs; however, it is possible to find evidence to support all three trends (increase, decrease, no change). For example, a report from NOAA's National Status and Trends Program on data in the Southern California Bight (Mearns et al., 1991) show that most contaminants in sediments and tissues have decreased over time while one contaminant (cadmium) in marine organism tissue levels has increased over time. In other Status and Trends program reports with results from a national perspective (e.g., NOAA, 1989), it is possible to find all three trends in the same location for different contaminants (e.g., for mussel tissues in Long Island Sound between 1986-1988, cadmium was decreasing, mercury was increasing, and there was no change in PCB levels).

Whether or not this increase in contaminated volume is due more to an increase in source inputs, more stringent regulatory standards, or more sensitive testing methods, I wish to emphasize once more the importance of distinguishing between hazardous waste and contaminated sediment when evaluating treatment technologies and disposal alternatives. Because of the state of the art and costs involved, remediation technologies are not a viable option for anything other than the relatively small volumes of dredged material that are classified as dangerous or hazardous waste. Contaminated sediment is handled most effectively by alternative disposal options as outlined in my original testimony.

QUESTION 3: *At what cost must new management and treatment technologies be made available to make them economically viable, and how far away are we from making them cost-effective?*

RESPONSE:

Until new management and treatment technologies are equivalent in cost to confined upland disposal options (i.e., in the $10 - $100 per cubic yard range), then upland disposal will <u>always</u> be chosen over remediation because of the obvious economic savings. It is difficult to state "how far away" we are from making them cost effective; there are different remediation/alternative treatment technologies, depending on the particular contaminants of concern. However, most of them have only been done at the "pilot scale" level and cannot handle the volumes associated with typical dredging projects. Unless the government is willing to subsidize a particular treatment technology to "ramp up" to full production scale to handle the necessary volumes at a cost that is competitive to land disposal options, I cannot envision the economic incentive for private industry to do it on its own; why would any company want to provide an alternative waste treatment service now that is more expensive than available land disposal options? I have no doubt that as hazardous landfill areas eventually start reaching capacity, the exponentially increasing costs to use diminishing available space will make remediation technologies more cost-competitive; I envision this would not happen for at least another 10-15 years.

QUESTION 4: *Do you feel that the volume of dredge material considered to be contaminated is rising? Do you feel that this increase is due to actual increases in contaminating activity or to the development and employment of more accurate and precise testing methods which are being used to detect a broader range of potential contaminants?*

RESPONSE:

See response to Question 2.

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Environmental Mediation and Open-Water Disposal

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Abstract

Between 1986 and 1992 in New Zealand, the Ports of Auckland, Ltd. was engaged in an expensive, drawn-out legal battle to obtain a water-rights permit for a maintenance dredging project to deepen berthing areas; approximately 270,000 m^3 of material were scheduled to be dredged and deposited at a newly designated disposal site located in 30 meters of water in the Hauraki Gulf, north of Auckland. After obtaining a water-rights permit conditioned by a court-imposed monitoring plan in the spring of 1992, the Ports found themselves in the midst of an enormous public opposition campaign organized by a variety of environmental and citizens action groups. In the summer of 1992, SAIC was hired to help facilitate a resolution so that the court-approved dredging could proceed. After two weeks of intensive educational outreach combined with environmental mediation in a series of 23 sessions between the Ports and various groups, the parties were able to agree to implement a supplemental monitoring program above and beyond that imposed by the court to address outstanding public concerns, and the dredging went ahead as planned despite some continued low level of public opposition.

With the recent passage of the Ocean Dumping Ban Act, dredged material is currently the only material allowed to be disposed at sea. This incident in Auckland is similar to ones that have occurred throughout the United States and other countries; there is a clear need for a major initiative on public outreach and education concerning the environmental issues involved with dredged material disposal. Scientists and engineers need to work in combination with mediators or facilitators trained to understand human behavior and deal with the emotional

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side of these issues so that "win-win" solutions can be achieved; otherwise, future laws banning open-water disposal will be passed in reaction to the public's general fear that their environmental concerns will never be addressed cooperatively by industry and the government.

Introduction

The environmental controversy that frequently accompanies concerns about open-water dredged material disposal creates particularly difficult challenges for resolution by mediation, occasionally due to the complexity of issues that can surround a specific project, but in large part most often due to the negative "public relations image" of dredged material. As the public's awareness of environmental concerns came to the forefront in the 1960s with the passage of the National Environmental Policy Act in 1969, the decade following the Act's passage marked the growth of serious movements to ban the disposal of all wastes in the ocean, culminating in the Ocean Dumping Ban Act of 1988. Unfortunately, at the beginning of the environmental movement, all wastes, including municipal sewage effluents, industrial residues, and dredged material, were treated as one and the same by regulators and the public. Gradually, regulators came to recognize that marine dredged material would bind pollutants in such a way so that when they were on the ocean floor, the contaminants often were not bioavailable (Pequegnat et al., 1990). Evidence from the Dredged Material Research program carried out by the US Army Engineer Waterways Experiment Station throughout the 1970s as well as other dredged material environmental monitoring programs such as the New England Division's DAMOS program provided support that the ocean is frequently the most appropriate of all receiving environments for salt-laden dredged material. These findings, together with results showing that land disposal under some conditions could actually mobilize contaminants from dredged material, caused the parties of the London Dumping Convention to recognize that dredged material should not be classified with industrial and municipal wastes. However, it has been my experience that in the public's mind, dredged material is still lumped in the same category as sewage sludge and considered an anthropogenic, toxic input to marine waters.

Environmental problems, such as controversial dredged material disposal projects, present a challenging arena for conflict resolution (Bardwell, 1991). They frequently are complex, plagued with uncertainty, and extremely political, which makes it especially difficult for scientists and engineers trying to present data or logic to counter specific public concerns. While it can be difficult to garner an involved populace to help address issues that should be decided in the public forum, the way people understand complex environmental issues more often than not only overwhelms and discourages them. The challenge for

the future is to facilitate rather than undermine how effectively people address environmental issues; the traditional litigious route with adversarial positional arguing tends to sabotage rather than facilitate effective solutions. There are definite parallels between environmental and social problems, and this paper will attempt to point out how vantages from both cognitive psychology and conflict management can be combined for successful outcomes.

Like most social problems, environmental problems are hard to solve because they are ill-structured (Bardwell, 1991). There are many ways of viewing a particular problem, many paths worth exploring, and rarely is there one "right" solution. The effects of various solutions can play themselves out over various time scales, and inevitably, each resolution can be associated with a new array of problems (or, as one cynic quipped, "Today's environmental problems are yesterday's solutions"). The risks are high, and the consequences of our actions are potentially long term and sometimes irreversible; most people feel overwhelmed and full of uncertainty trying to integrate data and concepts that to them have no more in common than cement and vegetables.

Where scientists and engineers often fail is realizing that solving these issues entails more than finding a logical, technical solution: environmental choices reflect politics, social and cultural values, and expectations as much as scientific "facts". Decisions ultimately depend on what priorities and trade-offs we (as a society) choose; they also imply what risks and changes we are willing to accept. More often than not, the complexity of issues calls for the reconciliation of disparate, often contradictory information from many fields. Given the difficulty of incorporating a diversity of views, conflict is inherent in environmental problem-solving.

The New Zealand Issues

Prior to the summer of 1992, the last dredging operations in Auckland Harbor took place in 1986. With sediment accumulating in the port at the annual rate of approximately 40,000 m^3, large passenger vessels such as the "Queen Elizabeth II" and "Canberra" were unable to berth at Auckland's Princes Wharf Passenger Terminal in 1991 and 1992 because of shoaling problems in the berths; similar problems at other wharfs prevented cargo ships from loading full cargoes. In 1986, the Auckland Regional Water Board (ARWB) ruled that a Water Right (disposal permit) was required for dredged material disposal and required the Ports of Auckland, Ltd. (POA) to investigate sites other than the traditional range of selections for long-term disposal strategic planning. Between 1987 - 1989, engineering and environmental consultants for the Port investigated a number of land and marine disposal options. After submitting a proposal for a disposal site to the ARWB in 1989, the POA was required to have an

independent audit done of their long-term disposal site; the audit was done by the US EPA, took 11 months, and the final proposal for a water rights permit was submitted in the summer of 1990.

The ARWB convened a two-day hearing in October 1990; there were 25 objectors to the POA's proposal, including Greenpeace, the Royal Forest & Bird Society, and the Maruia Society. Approval was granted with certain conditions imposed on the permit, including seasonal restrictions of dredging operations as well as monitoring and disposal control. Environmental groups protested against the decision and encouraged the Auckland City Council (ACC) to appeal against the decision. In December 1990, the ACC along with ten other objectors (not including Greenpeace) appealed the ARWB's decision. In February 1991, the POA applied for a priority fixture hearing and requested that the appeals of some of the objectors (the Maori groups) be rejected; the judge agreed. In May 1991, the Mayor of Auckland proposed that the ACC withdraw its appeal, and the council voted 17-7 in favor of withdrawing. In July 1991, the ARWB's Planning Tribunal heard the appeal; the hearing took nine days. Some of the objectors withdrew their appeal at the commencement of the hearing without offering evidence, and the Maruia Society withdrew their appeal on the second day after negotiating additional monitoring requirements with the POA. Each side had their own expert witnesses testify (the POA called 5 scientific advisors to the stand; the appellants called 7 scientific advisors and 12 witnesses; each side had the opportunity to cross-examine witnesses and introduce rebuttal evidence). In December 1991, the Tribunal decided to uphold the Water Right in a 66-page Record of Decision that imposed additional monitoring requirements on the POA. The Hauraki Maori Trust Board continued the legal battle and appealed the Planning Tribunal decision. A Court of Appeal hearing was set for June 1992, but an out-of-court settlement was reached.

Under the country's Resource Management Act, the POA then had to obtain a <u>dredging</u> permit (different from the Water Rights <u>disposal</u> permit) from the Auckland Regional Council (ARC). The ARC commissioned a report on the situation from an independent consultant; meanwhile, Greenpeace had once again taken the initiative of organizing environmental groups and public protests in hopes to influence the ARC's decision on the dredging permit. It was in the midst of this flurry of public demonstrations and organized protests in front of the POA and ARC buildings, threats of recreation and fishing vessel armadas to block the dredging operations should they commence, as well as newspaper and radio coverage in June 1992 that the POA decided to explore alternative approaches to dealing with the situation. I was contracted by the POA through an SAIC joint-venture A&E firm partner to see what I could do to mitigate the situation and facilitate a resolution to the impassioned dispute that existed over this issue.

Typical of most drawn-out environmental disputes that employ litigation as the means to an outcome, the court process had been time consuming, expensive, emotionally draining, and had left all parties on each side feeling burned by the process. Greenpeace still saw the court's decision as a permit for the "senseless degradation" of the marine environment and characterized the material in their press releases as 270,000 m^3 of "toxic sludge"; they firmly believed that open-water disposal would (quoting from their press releases) "create a virtual marine desert" at this newly designated site in the Hauraki Gulf, have a negative impact on fisheries, have a negative effect on a rocky reef marine community 3 km away from the site, and asserted that "dumping land derived sediment at sea goes against sound environmental practices and traditional Maori belief." They urged alternative disposal options such as landfill or reclamation activities to convert the dredged material into landscaping topsoil. The POA saw the dredging as essential for them to stay in business, were convinced that their past 6 years of study where they had spent in excess of $1,000,000 had proved conclusively that there would be no negative environmental impact; they had agreed not only to seasonal restrictions (that would increase the cost of the operation), but also to a great deal of additional monitoring as a result of the Planning Tribunal appeal. They felt they had gone over and above what had ever been required in the past and demonstrated nothing but a concern for environmental issues by their willingness to jump through all the additional hoops imposed by this litigious process. They were fed up with being painted as "the bad guy" in the press, unwilling to bow to additional demands, tired of spending an undisclosed but substantial amount on legal fees over the past four years, and just wanted to get this long-delayed project completed.

To complicate matters, a review of the supplemental monitoring requirements imposed on the POA by the December 1991 Record of Decision by the Planning Tribunal forced me to conclude that a majority of the additional monitoring tasks imposed by the ARWB on the POA were based on a biased sampling design that would produce little, if any, useful information as far as addressing additional issues of concern. Typical of many poorly designed programs (an all too frequent consequence of legislatively imposed monitoring), there were no clear objectives stated, no hypotheses being tested, statistically flawed strategies, and a plethora of vague language such as sampling being performed to measure "the well-being of aquatic biota" or samples taken to explore "the statistical relationship between levels".

After a handful of initial meetings with the POA where they agreed to open the process up again, an intense schedule of outreach forums was set up where 23 separate sessions were held within a two-week period. In addition to meeting individually with most of the opposition groups involved in the original protest

and subsequent appeal, meetings were also set up with the ACC and ARC as well as local school groups and one of the island communities. The individual sessions consisted of an initial educational outreach on the lessons learned from the past 20 years of research in the US about the physical, chemical, and biological impacts of open-water dredged material disposal. Following the educational portion, an open question-and-answer period was then followed up in the oppositional groups with an opportunity to have them voice any remaining concerns they still had about the process. As a result of these meetings, the POA agreed to some additional monitoring tasks above and beyond all those imposed by the court (both the original and supplemental monitoring programs) that both sides agreed would help address specific concerns that the environmental groups felt had never been heard or validated by anyone up to that point.

In the months following the two weeks of mediation, the ARC granted the dredging permit, and the dredging operation got underway with a minimal amount of residual opposition. The entire dredging and disposal operation was completed between September 1992 and January 1993.

Lessons Learned

Having had the pleasure of being an expert witness in both state and federal court cases on dredging disputes, I saw the situation in Auckland as a classic re-enactment of one I've seen happen in many coastal communities of the US where controversial dredging projects are presented in public workshops or litigated in court. The Corps of Engineers or permit sponsor will trot out a long line of scientists, engineers, physical oceanographers, biologists, geologists, and modelers who will overwhelm either the judge or public with a wealth of data to back up their particular point of view. The environmental opposition groups will also bring forward their experts, but more often than not present impassioned pleas about preserving the environment, of not polluting the oceans or killing additional marine life, or not creating underwater Superfund sites where toxic fish will eventually find their way onto the nation's dinner tables. It is what I classify as a "shouting match of the deaf", where one side is projecting logical arguments from their head and the other side is projecting emotional arguments from their heart or gut; the two conversations whiz by each other at their respective levels, each unheard by the other side. This had gone on in Auckland for over four years, and while the intensive two week session in June of 1992 was an effective bandaid, the process should have been started much earlier and continued from inception to completion; there are still emotional scars left in that region of the world on both sides of the table that are sure to erupt whenever the next dredging project is proposed.

It is imperative that the major port authorities or the regulatory agencies responsible for dredging (US Army Corps and US EPA) need to revise and open up the entire process and involve potential opposition groups in the decision-making as early as possible in dredging projects; the current delays in major permit actions or dredging projects in New York, Boston, San Francisco, Richmond, Oakland (to name a few) provide strong evidence that the current way of doing business is not working too well. The biotechnology industry, who have been on the scene for a much shorter time span than the dredging industry, has learned through painful lessons that they need to be just as savvy in public relations as in science in order to pave the way for successful field testing of genetically altered or engineered organisms (Sun, 1988). They have realized that in order to polish their image and boost their credibility with the public about biotechnology, they need to disseminate more information to the public well in advance of actually applying for any permits or trying to conduct outdoor experiments. Their aggressive public relations campaign to be as open as possible and provide the concerned public with information they request is paying off in many areas of the country; numerous field tests of genetically engineered microbes and plants have been conducted without controversy because the public feels fully informed and part of the final decision of whether or not testing will go ahead in a particular region.

People are slowly realizing that adversarial forums are not the best methods to address issues surrounding dredging or any other environmental problem. When decisions in a dispute are seen as choices between winners and losers (or instead based on some narrow procedural ground), the interests of one, and sometimes all, of the parties in the dispute remain unsatisfied. Instead, environmental disputes usually need solutions that make both good economic and environmental sense (Bardwell, 1991).

I alluded earlier in the paper how a synthesis of the disciplines of cognitive psychology and conflict management can shed some insight on environmental problem-solving; I would urge interested readers to refer to Bardwell's excellent article (1991) for more details, but essentially a major focus in successful environmental mediation has to be placed on helping a group solve a problem effectively. Problem-framing presents a synthesis of these two disciplines so that effective problem-solving can occur in a group setting. An understanding of how people solve problems (as well as understanding how they behave in groups) is necessary to facilitate this process.

The seemingly logical assumption that giving people enough information will lead to appropriate actions overlooks both informational and psychological concerns; knowing how people perceive and use information is critical to understand how they solve problems (Bardwell, 1991). People cannot store and

access all the information they receive; at best, they can handle only a few (3-7) different units of information or thoughts at one time (Mandler, 1975). Faust (1989) presents convincing evidence for his assertion that individuals have considerable difficulty "integrating" even two or three variables at once. They selectively use information while relying on mental models or cognitive "maps" they have built through life experience. Any relevant information that reinforces or builds on those maps is stored; people use these maps rapidly, almost automatically, to access organized information to interpret and respond to their environment. Because these maps make decisive action possible, people place a high premium on using maps they already have on hand.

In problem-solving, this comes out as a bias toward the familiar; people will solve problems in ways that fit into pre-conceived notions (i.e., into their pre-existing maps). Often with "sticky" environmental problems, an individual's model can't accommodate a particular set of new information. This leads to confusion, and for the majority of individuals, confusion is painful -- so much so that people strive ardently to quiet it, i.e., to make things understandable. This causes people to jump to conclusions without adequately examining the problem; their discomfort with uncertainty is so high that any solution will do. Moreover, if any problem-solving effort (i.e., a forum or workshop on a controversial dredging project) fails to bring about cognitive closure, people will respond emotionally with frustration, anger, helplessness, or apathy. Neither jumping to conclusions or any one of these other affective states results in very effective problem-solving. Interaction Associates (1986) did a summary of problem-solving tendencies where they claimed that 90% of group problem-solving efforts are spent:

- solving the wrong problem
- stating the problem so it can't be solved
- solving a solution (i.e., stating the initial problem in terms of a solution)
- stating problems too generally
- trying to get agreement on the solution before there is agreement on the problem

The crux of problem-framing is to spend time on problem definition, and it's incumbent on the facilitator to take the group through these stages (Bardwell, 1991):

1. Build an understanding of the problem; define the problem-space.
2. Establish some initial criteria for the goal.
3. Search for solutions.
4. Decide among solutions.

5. Evaluate progress; compare the initial goals to the solution as well as monitoring the solution.

It's been my experience that environmental mediation, especially for dredging issues, is best done with both a trained facilitator and a trained scientist. The facilitator must be schooled in human behavior or psychology to deal with the emotional interactions and behavioral evolution that occurs in the group, and the scientist must be experienced in environmental monitoring program design so that when resources of concern are identified, technically defensible sampling strategies will be incorporated so that unambiguous data will be produced to directly address management objectives (Germano et al., 1992). The key to success on the emotional side of the equation is openness, while the key to success on the scientific side is clearly stated objectives with sampling strategies designed around testable null hypotheses. While openness is a key to a successful group outcome, it is the final rather than one of the initial stages of group evolution (Schutz, 1984); both the facilitator and a newly formed group should not expect complete openness and a successful solution identified by the end of the first working day.

Two rules that I have found helpful to keep in mind at all times while evaluating myself as a facilitator as well as participants in a group are:

1. In 99% of all cases, the presenting problem is never the source conflict; until the source conflict is identified and dealt with openly, an effective solution will not be found.

2. If I have a particular answer in mind, then I'm not truly asking a question. Is my real intent to get information or to manipulate?

Resource managers in regulatory agencies or port directors often balk at alternative approaches to controversial dredging issues such as mediation for conflict resolution if a conflict already exists, or proactive engagement of the opposition in an open forum to prevent problems from erupting in the first place. Typical complaints are that it is either a waste of time (based on their past experience as participants in ineffective workshops), takes too much time (inconsequential when compared to the delays imposed by court litigation, appeals, or public demonstrations), or they will express fear that opening up the process will mean a loss of control on their part (again, given the unknown outcome of litigation, control over controversial situations is never a given). A basic tenet for successful environmental problem solving is that in order for any solution to be implemented and successful, all parties affected by that solution need to be part of the decision-making process; public and environmental action groups will be both empowered and support the final decision if they are part of

the process from its inception. I feel quite strongly that effective solutions are possible if people are willing to be flexible; usually there are always compatible and often common underlying interests to all these problems. I have yet to come across any dredging permittee whose underlying objective was, "I really want to screw up the environment".

In summary, there are a host of problems that are facing those involved with or concerned about dredging, but none of them is insurmountable. There is a clear need for a major initiative on public outreach and education concerning the environmental issues involved with dredged material disposal. Scientists and engineers need to work in combination with mediators or facilitators trained to understand human behavior and deal with the emotional side of these issues so that "win-win" solutions can be achieved; if this does not happen, it will not be too long before laws banning open-water disposal will be passed in reaction to the public's general fear that their environmental concerns will never be addressed cooperatively by industry and the government. Environmental mediation can provide an effective forum to insure that we are handling dredged material in the most responsible manner and with the best stewardship possible.

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Key Words

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sampling strategy
expert witness
cognitive psychology
human behavior

U.S. House of Representatives
Committee on
Merchant Marine and Fisheries
Room 1334, Longworth House Office Building
Washington, DC 20515–6230

June 14, 1994

BACKGROUND MEMORANDUM

TO: MEMBERS, SUBCOMMITTEE ON OCEANOGRAPHY, GULF OF MEXICO, AND THE OUTER CONTINENTAL SHELF

FROM: SUBCOMMITTEE AND COMMITTEE STAFF

RE: IMPACT OF OCEAN DUMPING ACT AND FEDERAL DREDGING POLICY ON REGIONAL DREDGING ISSUES

On June 14, 1994, at 10 a.m., the Subcommittee on Oceanography, Gulf of Mexico, and the Outer Continental Shelf will convene to hear testimony on the impact of the Ocean Dumping Act and Federal dredging policy on regional dredging issues.

Witnesses invited include the Honorable Robert Menendez and representatives of the U.S. Department of the Army (Civil Works), the Environmental Protection Agency (EPA), the Maritime Administration (MARAD), the Port Authority of New York and New Jersey, the Massachusetts Port Authority, the Port of Corpus Christi Authority, Scientific Applications International Corporation, and the Coast Alliance.

BACKGROUND

The U.S. Army Corps of Engineers (COE) is responsible for maintaining access to ports and harbors through Federal navigation dredging projects. These are authorized under various Water Resources Acts. The vast majority of dredged material is not ocean dumped, rather it is placed on land or along side channels in an "over the side" operation.

Ocean dumping refers to the intentional, direct disposal of material at sea. Since the passage of the Ocean Dumping Ban Act in 1988 (Public Law 100-688), the vast majority of waste dumped in U.S. ocean waters is dredged material, a term used to describe sediment removed from waterways to improve navigation. Dredged material is comprised of sand, gravel, silt, clay, organic matter and chemical compounds. Dredged material can also be

contaminated with various metals and organic chemicals and thus require special treatment or management practices to ensure there is no degradation of the marine environment. However, the COE considers only three to five percent of dredged material can be considered seriously contaminated.

The Federal Regulatory Scheme: The Ocean Dumping Act

Although Federal laws restricting dumping in harbor areas were enacted as early as 1886, the current major Federal statute governing ocean dumping of dredged material is the Ocean Dumping Act (ODA, title I of the Marine Protection, Research, and Sanctuaries Act, 33 U.S.C. 1401 et seq.). Under ODA section 103, the Army Corps of Engineers (COE) issues permits for the transportation of dredged material for disposal into U.S. ocean waters.

1. Ocean Dumping Criteria

In general, the COE may issue an ocean dumping permit if the dumping will not "unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities". The permit must also meet specific EPA criteria which include a consideration of:

* the need for the dumping;
* the effect of the dumping on humans, fish and wildlife, shorelines, and marine ecosystems;
* the persistence and permanence of the effects;
* the effect of dumping particular volumes and concentrations; and
* the effect on alternative uses of the ocean such as fishing and scientific research.

In addition to these criteria, the COE makes an independent determination of the need for the dumping, based on an evaluation of the potential effect of a permit denial on navigation, economic and industrial development, and foreign and domestic commerce. The COE must also consider alternatives to ocean dumping and, if none exist, appropriate locations for the dumping. The COE is to use "to the maximum extent feasible" existing ocean dumping sites designated by EPA. Permits under the ODA must also comply with any relevant State water quality standards and be consistent with State coastal zone management plans.

If the COE finds that there is no economically feasible method or site available, it may request an EPA waiver from the ODA criteria. At this point, EPA examines the proposed activity to see if it will "result in an unacceptably adverse impact on municipal water supplies, shellfish beds, wildlife, fisheries (including spawning and breeding areas), or recreational areas". If not, the permit may be granted. This waver authority has never been used as the COE prefers instead to resolve conflicts more informally.

2. Ocean Dumping Sites

As mentioned briefly before, EPA designates ocean dumping sites under the ODA. Approximately 119 ocean and coastal dumping sites have been designated by EPA, although many sites are operating under interim designations pending issuance of an Environmental Impact Statement under the National Environmental Policy Act.

Amendments to the ODA contained in the Water Resources Development Act of 1992 (WRDA 92) clarified EPA's authority to prohibit dumping at a site, as well as required site management plans at dredge disposal sites, including a schedule for review and revision of the plan at least every ten years. WRDA 92 also prohibits final designation of a site without a site management plan after 1994, and generally bans dumping at a site without final designation after 1996.

States' Role In Regulating Ocean Dumping

Until WRDA 92, States were prohibited from adopting or enforcing any rule or regulation relating to any activity regulated under the ODA. However, States were allowed to suggest criteria to EPA if the dumping affected State waters and could review ocean dumping activities for violations of State water quality standards under section 401 of the Federal Water Pollution Control Act. The application of State authority under the Coastal Zone Management Act of 1972 (CZMA) to review the proposed dumping activity for consistency with the State coastal zone management plan was unclear, as well as the application of State permitting requirements and environmental review.

WRDA 92 repealed the earlier limitation and greatly strengthened States' review of ocean disposal activities. First, explicit language preserving State rights to "adopt or enforce any requirements regarding dumping of material" in State waters was added, as long as States do not discriminate against out-of-State generated material. This will mean that ocean dumping of dredged material in State waters will be subject to both State and Federal requirements. For ocean dumping activities taking place in Federal waters, presumably the elimination of the earlier restriction would allow States to exercise their CZMA consistency review authority.

Alternatives to Ocean Disposal of Contaminated Dredged Materials

As stated above, only a small percentage of dredged material is contaminated enough to require special handling. However, given the presence of contaminated sediments in harbors and navigation channels which must continue to be cleared to allow safe vessel access, the growing number of coastal Superfund sites which involve sediments, public opposition to marine pollution, and scientific advances which allow us to detect smaller

quantities of pollutants, there has been considerable research on ways to isolate or decontaminate contaminated sediments.

Generally, if ocean dumping of contaminated dredged material is not environmentally acceptable, there are three options: 1) dispose of the material on land; 2) dump but minimize the environmental impact of the contaminants by capping or otherwise isolating the material; and 3) decontamination to allow conventional disposal or beneficial use of the dredged material.

The following is a discussion of some of the methods currently being used or tested for the disposal of contaminated dredge.

1. Land-Based Disposal

a. Hazardous Waste Landfills - In several cases, contaminated dredged material has been buried in dumps designed to receive hazardous waste. This is a very expensive option given the large volume of material, the high cost of space at hazardous landfill sites, and the cost of transporting the dredged material. Removing the water from the sediment can reduce the volume, but may create another disposal problem if the water is contaminated.

b. Confined Disposal Facilities - Very common in the Great Lakes region is the use of Confined Disposal Facilities (CDFs). Materials are mounded in these huge structures, often located on shorelines, and the materials are monitored for leaching or run-off of contaminants. With appropriate capping, the structures can be used for waterside parks. Local residents frequently oppose CDFs, and CDF capacities are limited (most usually fill within five years). In addition, allowing sediments to be exposed to air may cause chemical reactions, creating even more toxic substances.

c. Wetland/Beach Creation - Contaminated sediments have been used to create wetland areas under a combined COE-EPA Field Verification Program, and mildly contaminated sediment can be used for erosion control along beaches. Some contaminated sediments have been used to reclaim subsiding marshlands. Coarse contaminated sediments could also be used to provide fill for airports or other industrial uses which abut waterways, with proper safeguards for the environment.

2. Isolation of Dredged Material

a. Capping - One of the most commonly used remediation measures (especially in New England) is capping, where clean dredged material or other material is deposited in a thick layer over contaminated sediments to keep them in place. Dredged material contaminated with heavy metals can be capped with lime or calcium carbonate which binds the metals, preventing their introduction into the marine environment.

Capping is most effective where little sediment erosion occurs such as on flat or depressed areas of the ocean floor. Monitoring of the cap is needed to ensure its integrity, and recapping may be necessary. Capping may not be effective in deeper waters or in waters with high current velocities, and costs may be prohibitive if much clean material is not locally available. On the whole, though, capping is relatively inexpensive to use and is estimated to cost approximately $9/cubic yard to use. This was the solution recommended as part of the Newark Bay ocean dumping permit.

b. Abyssal Plain Disposal - Not yet tested is the idea of depositing contaminated sediments on the deep ocean floor on geologically stable and ecologically barren areas known as abyssal plains. Proponents of this technique argue that the tremendous pressures at these depths may compact and immobilize the sediments. In addition, they believe that sealife at this depth is relatively scarce, and therefore contamination through the food chain would be minimal.

c. Borrow Pits - Often as a result of construction activities, borrow pits are created in subaqueous areas of harbors and on land. Similar trenches may also naturally occur. These pits and trenches can be filled with contaminated sediments and then capped, if necessary. This method has been used in Lake Ontario. Factors which must be considered before using burrow pits are accuracy of the placement of the sediment and whether the sediments can bear the weight of a cap. This is one alternative being reviewed for the future management of contaminated dredged material in the New York-New Jersey Harbor.

d. Hardening - This treatment, which has been applied in Japanese harbors, involves injecting a hardening agent (such as Portland cement) into the sediments and stirring them up. The sediment then solidifies and its contaminates pose a lesser threat to the environment. This technique has been used with dredged material, but can also be applied to sediments left in place. Disadvantages of this technique are the resuspension of contaminates after the stirring of the dredged material and the requirement of precisely placing the hardening agent. In addition, hardening works well with sediments contaminated with metals, but is less effective with organic contaminates. The ultimate use of the hardened material must be considered. It can be sturdy enough for construction, but continued exposure to acidic conditions can cause contaminates to escape.

3. Decontamination/Isolation of Contaminates

a. Bioremediation - Sediments are first analyzed to determine if there are nutrient or oxygen deficiencies which inhibit the growth of naturally occurring organisms that break down pollutants into harmless constituents. "Fertilizers" can be applied to encourage the growth of these microbes, or the sediment can be inoculated with a new strain. Whether to dredge the sediments first is an issue, as is the long-term

effectiveness of this expensive treatment. Bioremediation has been successful in treating complex organic compounds (except PCBs), as well as metals, on a small-scale basis.

b. Incineration - Once contaminated sediments have been dredged and the water removed, the resulting material can be incinerated to destroy the pollutants. This practice is growing more common. The EPA has issued standards for incinerators which require limits on emissions and combustion efficiencies of 99.9 percent. Specifically, PCBs must be destroyed with 99.9999 percent efficiency. Continuous monitoring is needed to ensure these standards are met. Incineration works best on organic contaminates, as it may oxidize metals increasing exposure to living organisms.

Another incineration-like process, the Taciuk process, uses heat to separate organic contaminants from sediments. Pyrolysis applies high temperatures without combustion to degrade PCBs and other organics. The high cost of this method of decontamination, which includes dredging, transport, treatment, and disposal, amounts to $900 per cubic meter.

c. Vitrification - A combination of hardening and incineration, vitrification involves the channeling of an electric current through sediment to bind it into glass-like material. The intense heat also destroys PCBs and other organic contaminates. This has been used on a small scale with highly contaminated sediments at Superfund sites. The sediment must be dredged first, and poisonous gases from the vitrification process collected. Cost estimates are $60 per cubic meter.

d. In-Line Treatment - As used by the Japanese, in-line treatment involves the in-take of contaminated sediments in large pipes. Pollutant binders are then injected into the pipe and the resulting "clumps" of contaminates removed and treated.

e. Centrifuging - Because pollutants adhere to the finer portions of sediment, contaminated material can be loaded into large cyclones or centrifuges, and the coarser, cleaner materials extracted. The much smaller portion of polluted particles can then be decanted and treated. Costs for this technology (now in use on a small scale) is estimated to be $100-200 per cubic yard.

f. Propane Extraction System - This method uses propane gas converted to a liquid by pressure to dissolve organic pollutants. The propane and its load of contaminates are separated from the inert solids. Releasing the pressure converts the propane back into gas which is recaptured and used again. The isolated contaminates must be dealt with by further treatment. Propane extraction has been used on a pilot scale in new Bedford Harbor on PCB-contaminated sediments. Cost estimates range from $155 to $266 a cubic meter.

g. Other Chemical Processes - If the actual chemical makeup of the contaminates in the sediment are known, there are various

processes to render the contaminates less harmful or inert, after the sediment is dredged, and in some cases, dewatered. These include the modar supercritical process, which uses a combination of supercritical water, oxygen and pressure to degrade organics into harmless substances; the KPEG Terraclean Cl process, which uses potassium hydroxide and polyethylene glycol to initiate a complex chemical reaction that removes chlorine from PCB molecules, producing less toxic biphenyls which do not bioaccumulate; Light Activated Reduction of Chemicals, where chemicals are injected into sediments, the liquid decanted and placed into a reactor where it is treated with ultraviolet light; and various solvent extraction processes, which involve the treatment of sediments with organic solvents to remove PCBs and other organics (but not metals).

It must be noted that most of these methods generally require a single contaminant at high concentrations in the sediment to be successful.

4. Other Options

a. No Action Alternative - Allowing the sediments to remain, or to reduce dredging depth or location so as not to disturb contaminated sediments are also alternatives to managing contaminated dredged material. However, this is rarely acceptable since it would preclude the channel and berth improvements and maintenance that enable ports to accommodate virtually all the vessels that conduct interstate and foreign commerce.

b. Pollution Prevention - A favorite of environmental groups is preventing the creation of contaminated sediments in the first place. EPA is pursuing a pollution prevention strategy. While not specifically targeting sediments, sediments will benefit from contact with cleaner water and air. EPA sediment criteria, when completed, can also help prevent pollution from reaching sediments in the first place.

The Interagency Working Group on the Dredging Process

The Clinton Administration has indicated interest in improving the dredging process in a manner consistent with environmental protection. In a step to identify ways of make the dredging and disposal process work more efficiently, the Administration established the Interagency Working Group on the Dredging Process. The group consists of representatives from EPA, Fish and Wildlife Service, National Oceanic and Atmospheric Administration's National Marine Fisheries Service and Office of Coastal Resources Management, COE, and MARAD. The group's mission is to review the existing dredging and disposal process and identify ways to improve it at both a national and local level. As part of this effort, the group has conducted outreach meetings to solicit information about problems, issues, and

solutions on the dredging process from the public including port, shipping, and environmental interests.

The group's objectives are to promote greater certainty and predictability in the dredging and dredged material disposal process by reviewing and identifying ways of improving interagency coordination, information gathering, criteria review, and overall sequencing of approvals; and facilitate effective long-term management strategies for addressing dredging and disposal needs at both the national and local levels.

The MARAD compiled a document (The Interagency Working Group on the Dredging Process Options Paper, May 1994) which summarizes the information obtained from the first series of outreach meetings held in January and February, 1994, and presents options That could be used to address some of the problems identified with port development and the dredging and disposal process. The purpose of the document is to provide a general base of understanding for all interested parties attending the second series of outreach in May and June, 1994. A final report of recommendations is expected in the summer of 1994.

AAPA National Dredging Policy Proposal

The American Association of Port Authorities (AAPA) has been advocating the adoption of a National Dredging Policy by the Federal government to facilitate the approval of dredging projects in a timely and cost effective manner consistent with environmental regulations. To demonstrate the importance of our ports, both economically and in terms of national security, the AAPA points out that 99 percent of U.S. international trade -- nearly one billion tons of cargo annually worth nearly $500 billion -- moves on ships in and out of U.S. deep draft ports. This activity generates 1.5 million U.S. jobs and contributes $70 billion to the gross domestic product.

The AAPA also seeks amendments to the Clean Water Act, ODA, and WRDA 92 to do the following:

* provide for the consistent management and disposal of dredged material;

* establish a Federal program to assure the availability of and payment for construction of adequate, environmentally protective dredged material disposal areas;

* streamline the permitting process by eliminating sequential reviews, establishing timelines for permit review, and clarifying responsibilities of agencies;

* provide for site-specific general permits for low volume, regular maintenance dredging;

* provide additional Federal funding for the beneficial use of dredged material when it will facilitate the implementation of commercial navigation projects;

* require EPA, in consultation with COE, to establish guidelines to address upland disposal and beneficial use for dredged material; and

* encourage beneficial use of dredged material where Federal funding is available, and increase funding for research and development of sediment decontamination and management technology.

<u>Harbor Environmental Dredging and Management Act of 1993 - H.R.2173</u>

In response to contentious permitting issues allowing the Port of New York and New Jersey to dispose of dioxin-contaminated sediment dredged from Newark Bay into an Atlantic Ocean dump site, Representative Robert Menendez (D-NJ) has introduced H.R.2173, the Harbor Environmental Dredging and Management Act of 1993. The Act amends the ODA by:

* establishing a procedure for permit applications for the dumping of dredged material into ocean waters;

* directing the EPA to develop a national standard for the disposal of sediments contaminated with dioxin;

* requiring the EPA and the COE to develop and submit to Congress a plan for (1) the construction of a containment island as an alternative to the Mud Dump Site in New Jersey for the disposal of contaminated dredged material; and (2) the containment, clean-up, and prevention of dioxin contamination in the Passaic River basin in the vicinity of Newark, New Jersey; and

* authorizing the COE to approve the establishment of a consortium of permittees for the testing, permitting, and disposal of dredged materials to promote the cost-effective disposal and environmental management of dredged materials.

Issues

1. How big is the problem of disposal of dredged material from Federal dredging projects?

2. What alternatives are there to ocean disposal of contaminated sediments? Should additional Federal resources be spent in this area

3. Are the circumstances surrounding the Newark Bay permit typical for contaminated dredged material disposal? Can the changes to the ODA improve the permitting process for dredged material disposal (it took three years to have a permit issued for Newark Bay)?

4. What are the environmental risks associated with dredged material disposal in ocean waters? on land?

5. Is the permitting process for dredged material disposal under the ODA onerous? If so, what can be done to streamline the process?

6. Are there unique regional problems? What contributes to regional issues (historical events, geographic variations)?

7. Is the dredge permitting problem a regional problem or a Federal problem? What should be done Federally to alleviate the problem?

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EDWARD A. FRIEMAN
DIRECTOR
SCRIPPS INSTITUTION OF OCEANOGRAPHY

June 10, 1994

Honorable Solomon P. Ortíz, Chairman
Subcommittee on Oceanography,
Gulf of Mexico and Outer Continental
Shelf

U.S. House Representatives
Room 575, Ford House Office Building
(Annex II)
Washington, D.C. 20515-6230

Dear Mr. Chairman

My name is Professor Edward A. Frieman. I am the Director of the Scripps Institution of Oceanography in La Jolla, California. We are the oldest and largest oceanographic research center in the world; and, we have been asked to provide the subcommittee with an academic perspective on regional dredging issues at the Ports of San Diego and Ensenada and projected dredge disposal needs as they relate to H.R. 2173. A number of Scripps scientists have worked with distinction on the problem of dredge sedimentation for the last forty years. Among these are: Professor Douglas L. Inman, Dr. William G. Van Dorn, Dr. James A. Bailard and Dr. Scott A Jenkins. Inman's work was awarded the "International Coastal Engineering Award" in 1988 by the American Society of Civil Engineers and the 1990 "Ocean Educator" award by the Office of Naval Research; Jenkins received the "Inventor of the Year" award in 1985 from the Patent Law Association; and Bailard and Jenkins received the American Council of Consulting Engineers "GRAND AWARD" in l988 for a dredge sedimentation control system built at Grays Harbor, WA. Both Inman and Jenkins served in the National Research Councils' Committee on Sedimentation and Dredging in Strategic Harbors and Waterways.

The first perspective we would like to give the subcommittee is that dredged sediments fall into two broad categories which have distinctly different physical properties and should, therefore, be regulated and permitted separately under future dredge disposal laws. One of these categories is sand (referred to as "non-cohesive" sediments) which generally includes all sediments with a grain size courser than 60 microns. Sand does not adsorb heavy metals, halogenated hydrocarbons, bacteria or other contaminants. Sand is chemically inert and, consequently, these pollutants do not bind to the surface of the individual grains. Sand is also a valuable resource and is urgently needed to re-nourish our eroding beaches. However, existing dredge disposal laws make it exceedingly difficult to dispose dredged sands on the beach or immediately

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offshore of eroding beaches. In particular, existing disposal permit rules require that the color of dredged sands match the color of existing beach sands. The color match is a needless restriction which does not even exist in nature. New sandy delta deposits at the mouth of a river are always discolored until washed by repeated wave action.

Present beach disposal regulations also prescribe a grain size matching criteria which is too restrictive and does not recognize the full extent of beach erosion. Grain sizes are required to match on the beach face, and yet erosion begins a substantial distance seaward of the break point where grain sizes are much finer. Consequently, sand is often rejected for beach disposal because of too much fine sand content, when in fact it is still suitable for repairing beach erosion seaward of the breakpoint.' It is not necessary for regulations to determine the precise location for a particular sand size because the wave action will sort the sand naturally to a final equilibrium.

Because of our semi-arid climate and high energy coastline, most of the dredging at the Ports of San Diego and Ensenada involves sand. Between 14 and 15 million cubic yards are scheduled to be dredged from San Diego Bay to accommodate home porting of the CVN-70 class aircraft carriers. It is estimated that 90% of that material will be clean sand. It is also feared that much of it may wind up in our offshore dredge disposal sites, #LA-2, #LA-3 and #LA-5, because of excessive restrictions on beach disposal. Presently San Diego County beaches are running a sand deficit of about 22.5 million cubic yards because of erosion losses. The majority of that sand deficit is incurred in the offshore portions of the beach profile where present color and grain size restrictions on beach disposal are irrelevant.

Another major area for future dredging in San Diego and the border region will be a number of wetlands restoration projects. Three-million cubic yards are scheduled to be dredged from Batiquitos Lagoon and 3 1/2 to 5 million cubic yards from San Dieguito Lagoon. In addition San Elijo Lagoon will require 2 1/2 million cubic yards of restoration dredging while the Tijuana Slough requires 5 to 6 1/2 million cubic yards to restore continuous tidal exchange. These are important projects not just from the standpoint of providing endangered species habitat. The food web in these wetlands provides a natural treatment system for urban runoff and non-point source pollution. In spite of these benefits, such projects face difficult dredge disposal problems in regards to permitting and costs arising from regulatory restrictions. On site disposal is limited by available undeveloped acreage, and upland disposal by truck hauls is limited by road and noise restriction and by excessive cost. The ocean dumping option is the only remaining option for these projects to go forward. Again, roughly 90% of the dredged volume from these projects will involve various sand-sized fractions. A special relaxation of nearshore ocean dumping restrictions specific to wetlands restoration projects would greatly facilitate and reduce the cost of these projects. After all, in the absence of Man's intervention, much of the sediments in the wetlands would have found its way into these nearshore waters.

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The second broad category of dredged sediments are the silts and clays, commonly referred to as "mud". About 10% of San Diego's future dredging, or about 3.4 million cubic yards, will involve this category of sediments. These are very fine-grained sediments with grain sizes typically between 3 to 15 microns. These tiny particles have weak electric charges on their surfaces which give them great affinity for heavy metals, halogenated hydrocarbons, and organic material with bacteria and viruses. Consequently, muddy sediments are prone to contamination, and they often appear in harbors and wetlands as layers or lenses sandwiched in between clean sand.

In San Diego County, the most commonly contaminated muds involve PCBs, copper and tributyl tins from shipyard and industrial activity; DDT from agricultural activity and top soil erosion; and sewage sludge from infrastructure failures or abandoned sludge ponds.. Dioxin contamination is usually rare in San Diego, although a number of "Maquiladoras" on the Mexican side of the Tijuana River Basin are suspected of being waste dumps for a broad spectrum of toxic chemicals. PCB and dioxin contaminated mud has been found in the upper reaches of the Tijuana Slough following recent floods. There are only two existing options for disposal of contaminated mud in San Diego County: 1) the spoils pond on Fiesta Island and 2) local land fills. Neither of these has sufficient capacity to accept the projected 3.4 million cubic yards of contaminated muddy sediments that will result from future San Diego and border dredging activities.

Our academic perspective on ocean dumping of contaminated muddy sediments is that it presents great risks to the marine food web and the human recreational and economic activity in the nearshore. Because of the small particle sizes, muddy sediments settle at only about one foot per hour. Consequently they may readily up well from dump sites or be carried great distances by currents. Contaminants like PCB or dioxin require hundreds of thousands of years to denature in marine waters. The biochemical pathways of these toxins are still unknown, and therefore, a national standard on dioxin (as proposed in Section 3 of H.R. 2173) should be based on a bio-assay and not merely on some threshold concentration in the sediments. Present restrictions on the ocean dumping of contaminated muddy sediments are certainly well founded, and should remain in tact.

The proposal in Section 4 of H.R. 2173 to allow ocean dumping of muddy sediments (presumably contaminated) within a containment island is potentially dangerous and will likely prove infeasible in most cases for lack of a suitably tranquil location. It will be necessary to prevent ground water exchanges between the containment island and the surrounding ocean water, otherwise, contaminants will leach into the ocean. This means that the containment island will require a liner, as in a sanitary land fill. It will be exceedingly difficult to dewater the muddy sediments placed in a lined spoils pond. Dredged mud is typically 70% water by volume, and dewatering by known techniques prior to disposal can lower the water content to only about 30%. Therefore, the capacity of a mud containment island would be greatly limited by its ability to dewater through evaporation.

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June 10, 1994
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There are other technical concerns for ocean dumping in a mud containment island. The containment dykes would have to be sufficiently high to prevent overtopping by the extreme water levels which accompany a hundred year storm. The dykes would also have to be armored to prevent erosion of the island by wave and current action. There would have to be spill containment and clean up technology in the event of off-loading accidents or structural failures of the dykes. We find no language in Section 4 of H.R. 2173 which would insure that any of these technical concerns will be addressed in the permitting of these mud containment islands.

Finally, we favor the relaxation of certain dredge disposal and dredge permit regulations as discussed earlier in this testimony. However, Section 6 of H.R. 2173 proposes a process whereby a consortium of permittees would be tasked with posing new testing, permitting and disposal standards. This arrangement seems to invite huge conflicts of interest. It would be like allowing our students to decide which questions would be asked on the final exam. We believe that such issues should be resolved by a dispassionate, enlightened third party. Our recommendation would be to rely on the National Research Council who has already convened committees and developed thorough studies on the problems of dredging strategic harbors and waterways.

Sincerely,

Edward A. Frieman

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
CIVIL WORKS
108 ARMY PENTAGON
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REPLY TO
ATTENTION OF

29 AUG 1994

Honorable Solomon P. Ortiz
Chairman
Subcommittee on Oceanography, Gulf of Mexico,
and the Outer Continental Shelf
Committee on Merchant Marine
and Fisheries
House of Representatives
Washington, D. C. 20515-6230

Dear Mr. Chairman:

This is in response to your letter of June 23, 1994, to Dr. Morgan R. Rees, who testified on my behalf at the June 14, 1994, hearing on the Ocean Dumping Act and Federal Dredging Policy. Your letter forwarded additional questions to be answered for the record.

Enclosed you will find my responses to the questions posed by the Subcommittee Members and you.

If I can be of further assistance to you, please contact me.

Sincerely,

for
John H. Zirschky
Acting Assistant Secretary of the Army
(Civil Works)

Enclosure

Morgan Rees
Deputy Assistant Secretary
(Planning Policy and Legislation)

QUESTIONS AND ANSWERS FOR THE RECORD
DR. MORGAN R. REES
DEPUTY ASSISTANT SECRETARY PLANNING POLICY AND LEGISLATION
OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)

Question 1: What are the long-term dredge management options available to us?

Response: The Army, EPA, States and other entities with a role in dredged material disposal must continue to consider all of the disposal options available to us for both uncontaminated and contaminated dredged material.

We believe that uncontaminated dredged material is a natural resource that should be used to the benefit of the nation when possible. The Army has informally employed the concept of beneficial uses of dredged material within its national dredging program for many years and as formal policy since 1968. For uncontaminated sediments, we are aggressively pursuing, and will continue to pursue, beneficial use options, such as wetland and upland habitat development, beach nourishment, land creation, and construction aggregate and industrial use. An additional long-term option that we have recently employed is the use of clean dredged material from a nearby Federal or permitted project to cap contaminated material outside the navigation channel.

Long-term management of contaminated sediment presents a greater challenge. Confined disposal, in-water capping, and the limited use of decontamination technologies may continue to be the only methods acceptable to the public and environmental regulatory agencies. The Corps of Engineers (Corps) is, however, continuing to foster research on dredged material disposal and contaminated sediments. Research on reuse of sediments in disposal areas to increase capacity and on placing a finer grained fraction of sediments at beach nourishment sites are two areas which show promise for long-term application. Available options may continue to be very limited; therefore, it will be increasingly important to reserve these options for disposal of contaminated sediment.

We do not view any single dredged material treatment technology or management alternative as a panacea. Rather, each option must be considered on a project specific basis applying environmental protection, engineering practicability, and economic criteria.

Question 2) Do the EPA and the Corps believe marine sediment decontamination to be a viable tool available for dredge material management?

Response: Decontamination of the large volumes of dredged material normally associated with navigation maintenance projects, in and near coastal areas, will continue to be economically prohibitive for the foreseeable future. At the present state of technological development and contaminant source control (point and non-point), Army believes that the most prudent use of resources would be to continue to develop efficient and innovative technologies for treating small-volume "hot-spots" of contaminated sediments. Meanwhile, responsible authorities need to continue to implement source control measures and to improve management techniques for the large volumes of marginally-contaminated dredged material.

Question 3) What are the potential mid-term and long-term solutions *(in New York/New Jersey)* for the future of dredged sediment disposal?

Response: As presented in the answer to question 1, dealing with contaminated sediments is the primary problem in managing sediments from navigation projects. For dredging projects in New York and New Jersey Harbor, this problem is increased by a lack of suitable upland, nearshore, or in-water confined disposal areas. In this area, sediments in certain reaches are considered highly contaminated and not suitable for unrestricted open water disposal. The Corps is investigating the use of constructed underwater pits or natural depressions where contaminated sediments would be capped with clean sediment after the disposal operation. Use of the Mud Dump continues as the only viable short-term solution for certain categories of material. The Corps, in cooperation with the U.S. Environmental Protection Agency (EPA) and the States of New York and New Jersey and Federal and State natural resource agencies, is examining the future viability of a number of potential disposal alternatives, including confined disposal facilities and containment islands. It is recognized, however, that these alternatives will be very costly and take a number of years to implement.

Question 4) In reference to Section 502 of WRDA 92, what is the status of the National Contaminated Sediment Task Force? Who were the representatives to this Task Force and how were they identified?

Response: EPA is responsible for implementing section 502. We understand that EPA is being asked this question, and we defer to them to respond.

Question 5) Do you feel that the volume of dredge material that is considered contaminated is rising? Do you feel that this increase is due to actual increases in contaminating activity or to the development and employment of more accurate and precise testing measure which are being used to detect a broader range of potential contaminates?

Response: Yes, the volume of dredged material that is considered contaminated is rising. The increase in public awareness about contaminants is causing regulatory agencies to classify more material proposed for dredging as contaminated where the technical evaluations conclude that disposal of this material would not cause an unacceptable adverse environmental impact. Recent advances in analytical laboratory procedures are allowing us to measure contaminants in sediments in much smaller concentrations. Identification of contaminants in dredged material provides regulatory agencies an opportunity to ask more refined questions and require additional studies on sub-lethal effects.

Question 6) One of the suggested changes to the permit process has been to redefine the Corps' cost/benefit analysis of dredging projects to include as a potential benefit any environmental cleanup that occurs as a consequence of a dredging project. What would your agencies' response be to this idea?

Response: In principle, the current disposal evaluation process, whether it be for a permit application or for a Federal dredging project, provides for consideration of all environmental effects, including positive effects. For example, the benefit/ cost analysis for Federal projects includes consideration of non-monetary benefits such as environmental improvements. Several practical difficulties arise as a result of the state of the art of measuring the improvements and reaching judgements on the non-monetary benefits with respect to monetary costs. This is not to say we should not make such judgements, and, in fact, we are doing just that in many cases involving beneficial uses of dredged material. However, we have far less understanding of the environmental value of removal of contaminants from an aquatic ecosystem, and therefore judgements are much more difficult to make. A second practical difficulty is determining who should pay for the environmental clean up of contaminated sediment. Sediment contaminants generally occur from three categories of discharges; discharges which pre-date water quality control laws, discharges in violation of water quality control laws, and discharges which conform with water quality laws but nevertheless contain allowable concentrations of contaminants. Typically navigation interests are not responsible for the pollution, so it is not clear why those interests or the portion of the Federal budget allocated to navigation should bear the burden of the clean up costs.

Question 7) How do local agencies and the public fit into the Army's plan for implementing a national dredging program?

Response: In the process of developing dredged material management plans for all Federal navigation projects, the Corps is involving local agencies and the public during (1) the development of alternatives for dredged material disposal and (2) the assessment of the feasibility and acceptability of disposal options. The Corps is using a number of ways to accomplish this involvement. For example, planning for dredged material management in the New York/New Jersey Harbor Estuary has included the formation of a Dredged Material Management Forum for the expressed purpose of obtaining input from Federal, State and local agencies, interested private groups, and the public. The Forum is divided into working groups organized around different aspects of the dredged material management problem. These working groups assist in formulating various aspect of the dredged material management plan. Another example is the Citizen's Committee which was established to provide public input to the Dredging Needs and Placement Options Program for the Port of Baltimore. Although the vehicle for local agency and public participation will vary depending on the size and complexity of the dredged material management study, the Corps will, in all cases, actively seek local agency and public involvement in developing dredged material management plans under the national dredging program.

Question 8) The Federal government must go through all the same steps of the dredge permit process as any State or Port Authority, therefore regional problems are also the problems of the Federal government. How does the Federal government foresee improving the permitting process?

Response: We are incorporating revisions to Army's Regulatory Program resulting from President Clinton's Federal Wetlands Policy (Wetlands Policy), announced on August 24, 1993. Also, additional actions are being pursued in response to unresolved permit applications in the New York and New Jersey Harbor. We believe these initiatives will greatly improve Regulatory Program responsiveness to dredging and dredged material disposal actions without sacrificing environmental protection.

In response to the Wetlands Policy, the Corps and EPA provided joint guidance to the field which describes the flexibility afforded by the Section 404(b)(1) Guidelines (Guidelines) in rendering permit decisions based on the relative severity of the potential environmental impacts to waters of the U.S. (potential impacts to ocean waters are evaluated in conjunction with the Ocean Dumping criteria). In addition, the Corps is producing regulations which will generally require that permit application decisions be made within 90 days of the date

of the public notice, unless precluded by outstanding statutory requirements. The Corps is also producing regulations which establish an appeals process whereby applicants will be able to appeal permit denials or permit conditions believed to jeopardize projects, to Corps higher management levels. Both of the these regulations are scheduled to be published in the Federal Register this summer. These provisions will improve Regulatory Program efficiency and benefit permit actions involving dredging and dredged material disposal.

In addition, EPA, with assistance from the Corps and others, is developing a risk-based approach to evaluate the suitability of disposal of sediments containing contaminants, including dioxin. Army believes a standardized approach for establishing contaminants management thresholds (and not a nationwide standard) best addresses the unique, region-specific factors that may result in a contaminant having more harmful impacts in some areas than others.

Question 9) What are the long-term dredge management options available to us?

Response. Question is identical to Question 1.

Question 10) Do you believe marine sediment decontamination to be a viable tool available for dredge material management?

Response. Question is identical to Question 2.

Question 11) What are the potential mid-term and long-term solutions *(in New York/New Jersey)* for the future of dredged sediment disposal?

Response. Question is identical to Question 3.

Question 12) In reference to Section 502 of WRDA 92, what is the status of the National Contaminated Sediment Task Force? Who were the representatives to this Task Force and how were they identified?

Response. Question is identical to Question 4.

Question 13) What is the status of the National Sediment Survey and what is EPA's estimated timetable for reporting its findings to Congress?

Response: It is our understanding that the EPA is also being asked this question, and we defer to that agency.

Question 14) Do you feel that the volume of dredge material that is considered contaminated is rising? Do you feel that this increase is due to actual increases in contaminating activity or to the development and employment of more accurate and precise testing measure which are being used to detect a broader range of potential contaminates?

Response. Question is identical to Question 5.

Question 15) One of the suggested changes to the permit process has been to redefine the Corps' cost/benefit analysis of dredging projects to include as a potential benefit any environmental cleanup that occurs as a consequence of a dredging project. What would your agencies' response be to this idea?

Response. Question is identical to Question 6.

Question 16) One of the concerns that I have heard is that there has not been sufficient effort to develop treatment and disposal technologies much beyond their applicability to small-scale demonstration projects. How much federal funding and effort is being put into developing large scale, cost-effective applications of these new technologies? Is such application still a major technological hurdle?

Response. There has been considerable effort to identify and evaluate treatment and disposal technologies, including decontamination. When we consider applying these technologies to the large volumes of contaminated sediments with which we are faced, we have not seen any alternatives that are sufficiently effective or within reasonable costs to consider promising for large-scale application. We have somewhat broader experience in decontaminating soils and other materials on land; however, in the marine environment, different approaches must be taken. The costs per cubic yard associated with these approaches is quite high on small-scale applications, and predicting the costs of scaled-up, operational levels is somewhat difficult. The Corps and other agencies have expended approximately $18 million on treatment technology research and development, including the following (years and program funding in parentheses):

Corps of Engineers Dredged Material Research Program (1973-1978, $2,500K)

Field Verification Program (1981-1987, $300K)

Alternatives for PCB-Contaminated Sediments from Indiana Harbor, Indiana (1984-1987, $600K)

Engineering Feasibility Study, New Bedford Harbor Superfund Site, Massachusetts (1985-1989, $700K)

Water Resources Development Act (WRDA) of 1990, Section 412(c), Options for Treatment and Disposal of Contaminated Sediments from New York/New Jersey Harbor (1991-1994, $350K)

Assessment and Remediation of Contaminated Sediments (ARCS) Program, (1988-1993, $8,000K)

USEPA/Corps of Engineers sediment decontamination project sponsored by WRDA 1992, Section 405, for Port of New York/New Jersey (on-going)

U.S. Navy Contaminated Sediment Research (on-going)

Superfund Site investigations for a number of sites across the country (on-going)

Industry sponsored research, particularly for PCB-contaminated sediments (on-going)

Question 17) Do your agencies have in their permitting regimes an effective method for allowing the use of new disposal and treatment technologies and processes as they become economically feasible? Is there an established and understood set of criteria for evaluating the permitting of the use of new technologies?

Response: The Corps has not developed specific criteria for evaluating the use of new disposal and treatment technologies. However, under the current statutory/regulatory framework, the Corps has the authority and responsibility to evaluate the potential environmental impacts and the feasibility of new disposal and treatment technologies if they are proposed as dredged material disposal alternatives during the evaluation of a permit application. Proposed new disposal and treatment technologies must be reviewed by technical or scientific elements of both the Corps and the Environmental Protection Agency (e.g., the Corps Waterways Experiment Station, other Corps and EPA laboratories, and EPA's Science Advisory Board). The Corps would consult its technical elements under these circumstances. To the extent that the new technologies involve other media (e.g., air

emissions from incineration) and not necessarily a discharge of dredged material to waters of the U.S. or ocean waters, additional Federal, State and/or local authorizations may be required.

Question 18) What is the basis for the statement that 3 - 12 million cubic yards of the total 300 million cubic yards is considered contaminated? How much of this would be considered highly contaminated?

Response: The Office of Technology Assessment reported the 3 - 12 million cubic yards per year figure in a 1987 report entitled, "Wastes in Marine Environments." The figure was based on an approximate volume of 300 million cubic yards annually dredged times about 3-5 percent being contaminated sufficient to require special management techniques or treatment for disposal. This may include confined upland, nearshore, or in-water disposal, treatment, or capping. As we become better able to measure smaller quantities of contaminants in sediments many regulators are imposing restrictions on more dredged material. It could be argued that more material proposed for dredging is now being called contaminated.

Question 19) How do local agencies and the public fit into the Army's plan for implementing a national dredging program?

Response. Question is identical to Question 7.

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